

Contractors and Engineers

OCTOBER 1956

magazine of modern construction

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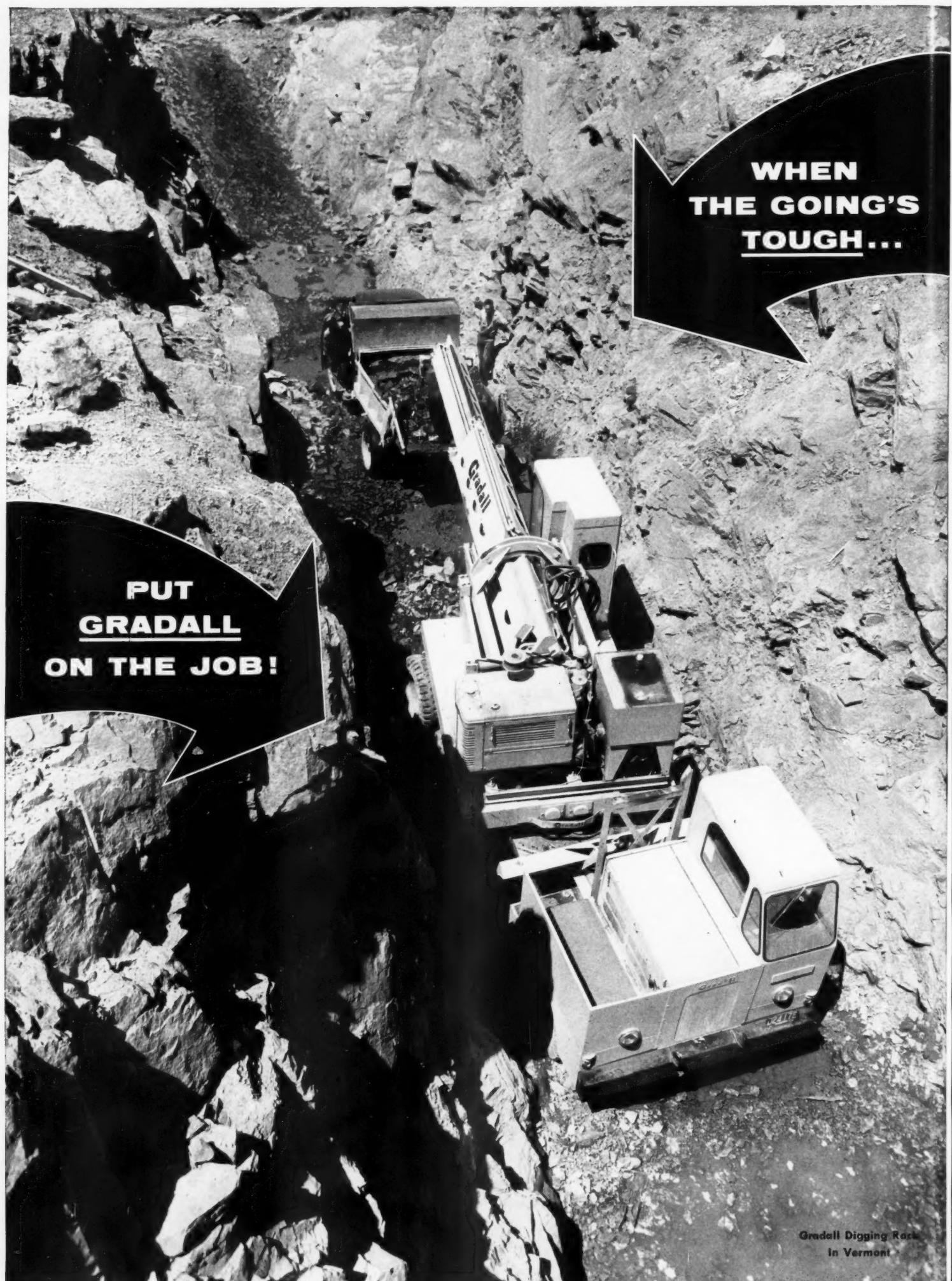
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SCIENCES



Winter Grading Page 110

winter
work



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Contractors and Engineers

magazine of modern construction

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First phase of Old River project.

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editorial

Contractors' liability for public safety

Last June 12th, six young children were suffocated when an excavation slope caved in on them as they were playing on the site of an arterial highway under construction in Brooklyn. The expressway is being built under the supervision of the New York State Department of Public Works as a limited-access connecting link between Brooklyn and Queens in New York City. The governments of New York State and New York City have disclaimed responsibility for the accident, although both have been named as defendants, along with the contractors, in negligence suits filed by the parents of the dead children.

After a three-month investigation, the Kings County (Brooklyn) grand jury indicted, on charges of second-degree manslaughter, five officers and employees of the contractor and subcontractor doing the work. In its presentment, the grand jury pointed out that on major construction projects there were no specific requirements for the safety of the public.

To remedy this situation, the grand jury recommended the enactment of a law assigning watchmen, with the power of special police, to cover large construction projects 24 hours a day. It also suggested that a division of public safety be established within the New York State Department of Public Works. The jury likewise urged an amendment to the present law so that a company, as well as its officers, could be held liable, through the assessment of a heavy fine, for such tragic accidents.

The day before the grand jury announcement, the N. Y. State Department of Public Works put into effect a new safety code holding private contractors responsible for accidents on

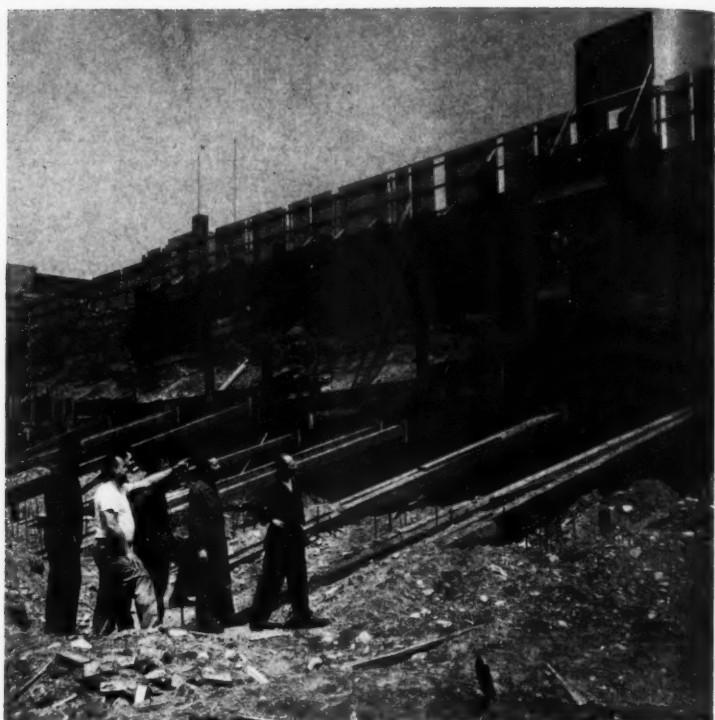
state highway projects within cities. According to the revised regulation, contractors are responsible "at all times for the safety of the general public, and for the protection of persons who may for any reason enter within the limits" of the project. New contract provisions require contractors to employ watchmen for round-the-clock duty; to erect adequate warning signs around the construction area; and to notify local police, in writing, of job-site conditions. Copies of this report are to be sent to the Public Works Department district engineer.

Contractors must also carry at least \$500,000 liability for injuries to one person, and up to \$1,000,000 for multiple injuries in a single accident. The old limits were \$50,000 and \$100,000 respectively. Property damage coverage must be increased from \$50,000 to \$1,000,000 an accident, and the contractor must carry aggregate property damage coverage of \$1,000,000 as compared with the present \$100,000.

These measures may serve to prevent accidents similar to the Brooklyn catastrophe. Most contractors are

aware of the importance of job safety where the well-being of their own workers is at stake. If contractors are not, they will personally suffer through man-hours lost from accidents, lowered morale among their personnel, and penalty increases in insurance premiums. Safety to the general public, however, has been slighted mainly because of the absence of ordinances specifically fixing such responsibility.

As a result of these new regulations in New York State, contractors may be forced to bid higher for work. What happened in Brooklyn may happen anywhere, of course, when children are permitted to roam about in areas that parents should recognize as dangerous. Nevertheless, contractors in other states should be warned by the Brooklyn tragedy to be alert to public safety on their projects. If they are not, they may well expect stringent regulations from the state, or even federal government that would hamper their operations. It would be far better for them to take that well-known ounce of prevention right now.



Contractors and Engineers



Heavy clothing and cab coverings protect operators of the Cat D8 and Euclid TC-12 tractors helping a Gar Wood 25-yard scraper pick up a heaping load during winter grading of a school site in Rochester, Minn. Leon Joyce, Rochester, moved 240,000 yards of

partly frozen ground in the 20 days allowed by the contract. The snow-covered mound, background, is topsoil stockpiled as top dressing for the finished grade.

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CONTRACTORS AND ENGINEERS

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CONTRACTORS AND ENGINEERS

The largest building in the world of a laminated-wood arch design, the new Long Island Sports Arena measures 206 feet wide, 350 feet long, and 65 feet high. Arches made of 137 tons of Southern Pine lumber form the superstructure.



Glue replaces nails in new sports arena

Twelve huge arcs, composed of 137 tons of Southern Pine lumber, have been bonded together with 2½ tons of glue for the superstructure of a sports arena in Commack, N. Y. Not a single nail has been used. Nearly completed, the arena is topped by a semicircular roof which, at its center, rises 65 feet above the arena floor.

The roof is supported by 12 Southern Pine arches, each made up of 28 laminations of 2-inch-thick lumber, pressure-bonded together with glue. The ten interior arches are 9 inches wide and vary in depth from 36 to 46 inches at the point of maximum stress. Two smaller arches at the ends of the arena each are 5 inches wide. All arches extend over a clear span of 205 feet and have a linear arc measurement of 240 feet.

Since the arena will contain an ice rink, which will alternately freeze and thaw, the glue used in laminating the arches had to be of the waterproof type in order that it would remain unaffected by condensation. Penacolite adhesives, manufactured by the Chemical Division of Koppers Co., Inc., withstood stresses that would ordinarily have torn the wood apart.

Requirements for both the wood used in the arches and the glue used in the lamination were particularly stringent, for within the completed arena, the entire ceiling area will be exposed. The arches were fabricated by Unit Structures, Inc., Peshtigo, Wis., for Roof Structures, Inc., New York, N. Y., the erector.

The Long Island Sports Arena will be the largest rink of a laminated-wood arch design in the world. The building measures 206 feet wide, 350 feet long, 65 feet high, and has a usable floor area of 17,000 square feet. The sides will be formed of concrete block, the roof of wood sheathing, and the deck of planking laid over the concrete foundation slab.

Designed to seat 7,000 persons, the arena will be adaptable to numerous sports, shows, and conventions.

THE END

Pa. road official resigns

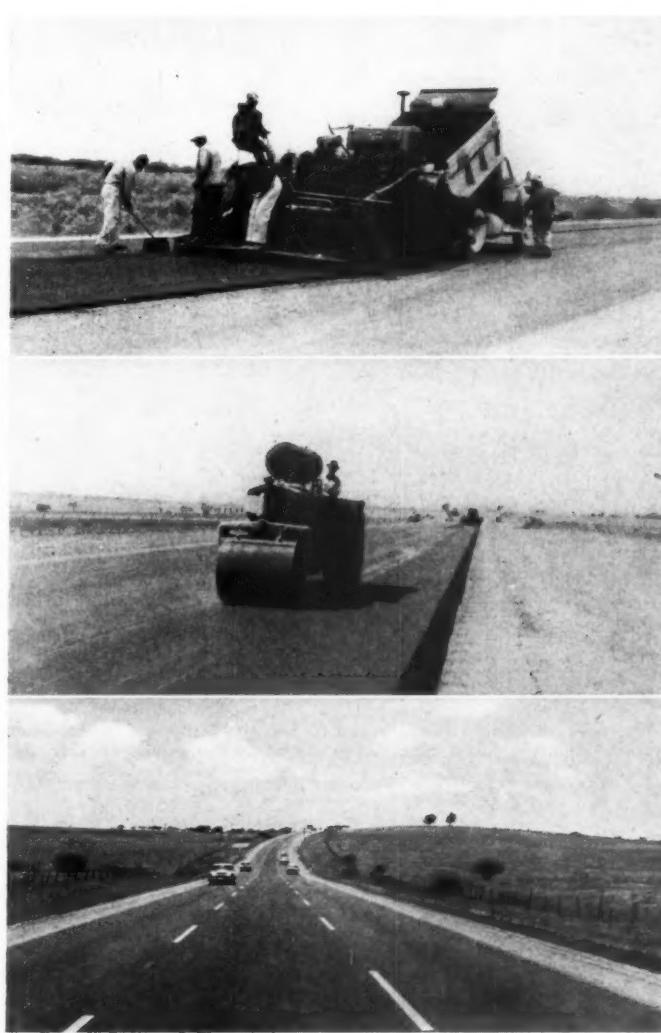
Arthur L. Wiesenberger has resigned as chief engineer of the Pennsylvania Department of Highways to return to work in his private engineering firm. He had served as chief engineer since September, 1955.

R. A. Farley, assistant chief engineer in charge of maintenance, has been appointed acting chief engineer.

Workmen secure a longitudinal support in the superstructure of the arena. Each of the 12 supporting arches extends over a clear span of 205 feet and has a linear arc measurement of 240 feet.



Lays 16.7 miles of Texaco Asphalt pavement in 25 working days



Laying a new plant-mixed Texaco Asphaltic Concrete pavement on 16.7 miles of U. S. Route 81, north and south of San Marcos, Texas in 25 working days. Traffic, which averages 6,200 vehicles a day, was uninterrupted.

The Gaylord Construction Company of Houston recently laid 16.7 miles (about 313,000 square yards) of plant-mixed Texaco Asphaltic Concrete paving on U. S. Route 81, south of Austin, Texas. Although the contractor used a single asphalt paving machine, he completed this sizable project in 25 working days.

To motorists, as well as to businesses along a highway or street, the speed with which paving operations are completed is an important consideration.

In addition to the rapidity with which it is constructed, heavy-duty Texaco Asphaltic Concrete paving possesses rugged durability. Its low upkeep cost has been demonstrated on many of the country's busiest roads and streets. It is immune to chemicals used to eliminate ice and snow. Its highly skid-resistant texture and the sharp visibility of traffic lines on its dark surface contribute importantly to safe motoring.

Helpful information for the road builder on methods and materials recommended for hot-mix, hot-laid Asphaltic Concrete paving is supplied in the booklet, "Texaco Asphalt Paving—Plant-mixed Types". Our nearest office will be glad to mail you a copy.



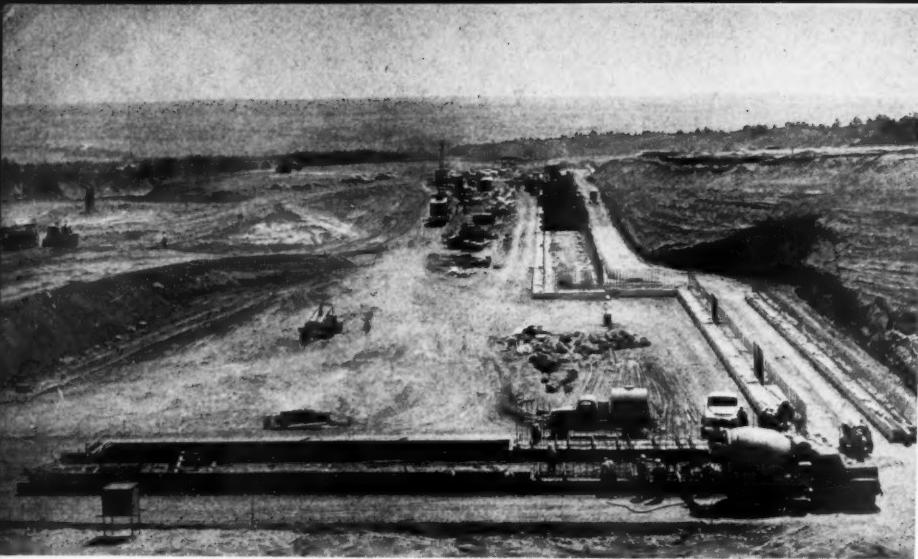
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TEXACO ASPHALT

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Dirt and concrete work go on simultaneously in the academic area of the Air Force academy. Grading and retaining-wall construction are among the first jobs on the main portion of the academy, which is being built on a series of levels or terraces.

The Air Academy moves off the drawing boards . . .

by RAY DAY

as heavy grading gives shape to academic areas and concrete methods hurry work on retaining walls

The academic, parade, drill, and athletic-field areas of the new U. S. Air Force Academy are beginning to emerge from virgin terrain at the base of the Rocky Mountains near Colorado Springs, Colo.; before the end of the year, grading and drainage of these areas will be completed, making the site ready for construction of the academy proper and its supporting facilities.

Current work—begun March 28, 1956, and scheduled for completion by December 23—is being done under a prime \$2,373,586 contract with the

U. S. Air Force by T. F. Scholes, Inc., Reading, Pa. Two subcontractors, Paul Hooper, Camden, Ark., and Long Construction Co., Inc., Denver, are doing the grading and concrete work, respectively.

Grading heavy

The grading job is big, involving 4½ million cubic yards of dirt work on 472 acres, and the general run of material consists of a granular decomposed granite. About 220,000 yards of this material—1/20 of the total yardage—is of a gradation that

will pass a No. 4 screen. From 25 to 55 per cent of this portion will pass a 200-mesh screen.

Boulders of various sizes are scattered through this soil, and some up to 4 cubic yards in size have been excavated to date. Under the specifications, however, extra payment is made if boulders ½ yard or larger have to be moved.

With the project 13 per cent finished, 2,700 cubic yards of these oversize boulders had been dug out of the ground. And since rock of this size comprises about 10 per cent of all

rock to be moved, it is safe to say that about 27,000 cubic yards of these boulders had been excavated when the job stood 13 per cent completed.

About 400,000 cubic yards of Dawson Arkose, a heavy cemented formation generally classed as undesirable, is also included in the total yardage. This material is being used only in the largest fills.

The busy earthmovers handling the heavy cuts and fills in the academic area almost resemble a spread working on a dam. Because of the size of the grading job, subcontractor Hooper



An Allis-Chalmers 360 motor scraper gets a pushing assist from an A-C HD-21 tractor.



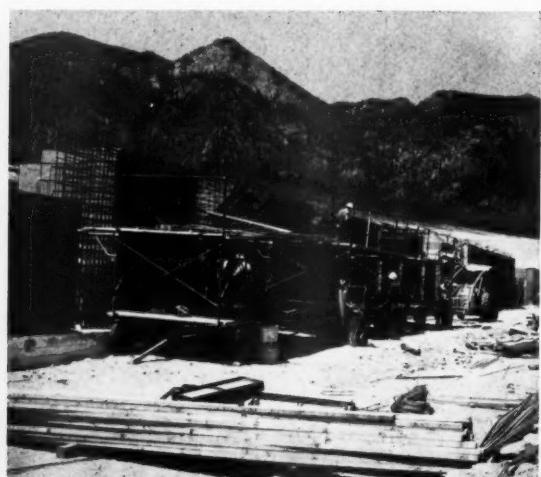
A Terrapac vibrating tamper, pulled by an Allis-Chalmers tractor, obtains surface compaction in one of the fill areas.



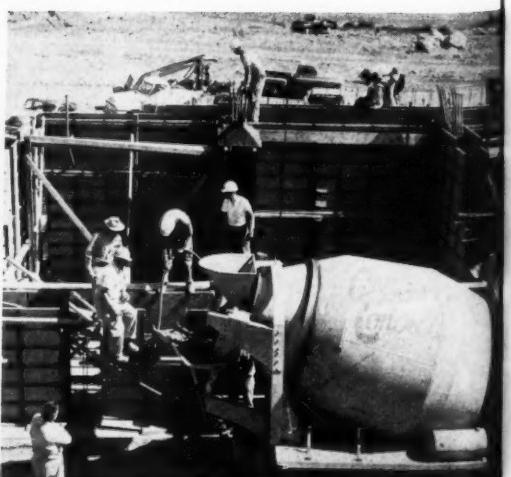
Economobiles, which also place front-wall concrete, carry Symons forms to wall areas.



Placing reinforcing for the retaining walls is made easier as crews press a Lorain Moto-Crane into use for unloading the steel.



First-stage forming for the retaining walls is done by men working from three 10 x 20-foot rubber-tire work wagons with double decks.



The first 4 feet of concrete is placed directly from a Jaeger truck mixer through holes cut at 8-foot centers in the Symons forms.

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has an Allis-Chalmers fleet of earthmovers worth an estimated \$650,000 at work almost constantly. This fleet includes eleven Allis-Chalmers 360 motor scrapers that are push-loaded by four HD-21 tractors with torque converters, two HD-16 bulldozer tractors, two Model AD-45 motor graders, five rubber-tire Allis-Chalmers farm tractors, and an HD-5 with a front-end rock loader. All this equipment was supplied by Kern-Limerick, Inc., the Allis-Chalmers representative in Little Rock, Ark.

In addition to this fleet, Hooper is using a Ferguson 50-ton pneumatic roller, four 3½-ton Terrapac vibrating compactors, three sets of McCormick disks, four Chevrolet 2-ton water trucks of 2,000-gallon capacity, and one Ford water truck with a capacity of 1,400 gallons.

One of the early problems for the grading subcontractor—getting enough water to supply the 8 to 9 per cent optimum needed for compaction—is now a thing of the past. But until the permanent water supply was developed for the use of the new academy, water for compaction purposes had to be hauled by truck to the site. Some of these hauls were as much as four miles in length, and much of this distance was uphill.

Water is applied to the lifts from the spraybars of delivery trucks; then the soil is processed and mixed with McCormick disks pulled by Allis-Chalmers farm-type tractors.

Density specifications call for 95 per cent of a Modified Proctor requirement directly under the building and wall areas, and 90 per cent compaction in parade-ground areas. In certain places, particularly under the concrete footing areas of retaining walls, special compaction is being obtained through the use of a 50-ton pneumatic roller. After eight passes of the roller to obtain deep pressure compaction in granular soil material, vibratory rolling is used to get surface compaction. The four Terrapac units on this job are as effective in some areas of this particular material as 50-ton rollers. With optimum moisture in the soil, about five passes of these units on 6-inch lifts develops the required 95 per cent density.

Hooper's earthmoving forces and equipment are handling approximately 20,000 cubic yards of material daily—an average of 10,000 yards per 10-hour shift. As soon as one area is completely finished, the grading subcontractor's crews move out, and men from Long Construction Co., Inc., quickly move in to build the reinforced-concrete retaining walls. Of the several unusual aspects of this subcontracted work, one is that the earthwork is completely finished by Hooper's forces, leaving the Long crews to do a job that involves only forming and concrete placing.

Two forming systems

The academic area of the academy will be built on a series of levels or terraces, and about 10,000 linear feet of walls, ranging from 2 to 34.5 feet in height are being constructed to support them. This work requires about 24,000 cubic yards of concrete,

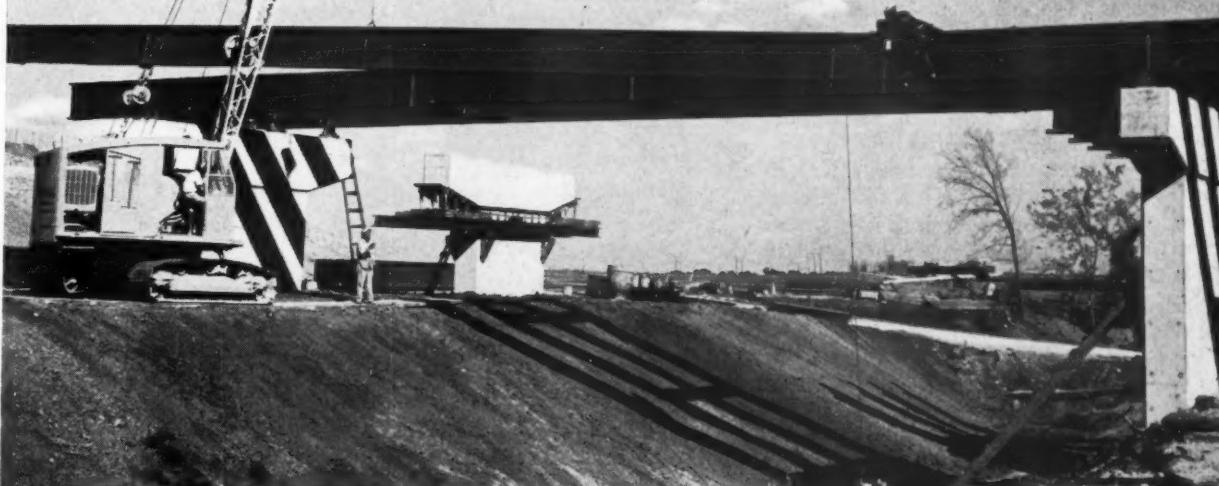
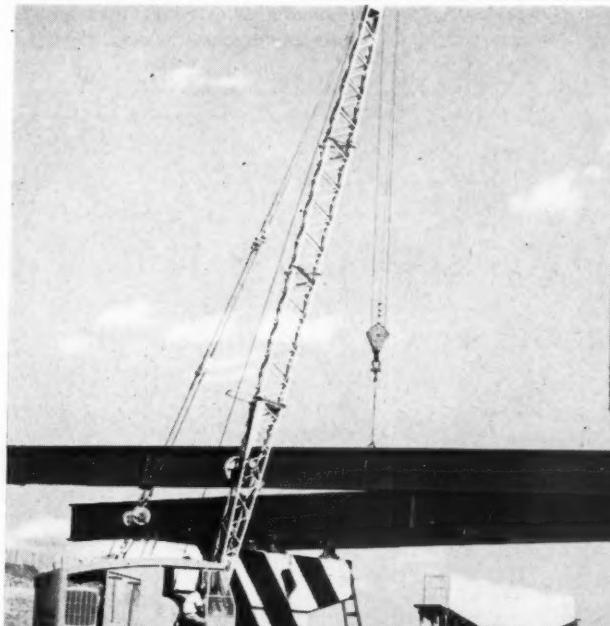
3,500,000 pounds of reinforcing steel, and 550,000 square feet of concrete forming.

Long Construction Co. is using two types of forms for this job. One type consists of special 5 to 8-inch-high steel forms which, stacked one atop the other and pinned to the ground, are being used to form the bases or footings of the heavy retaining walls. And since the walls were generally designed on a module of 1 foot and lend themselves to construction with patented forms, Symons plastic-faced forms in 2×4, 2×6, and 2×8-foot panels are being used. Some 18, 16, and 6-inch panels are also in use.

(Continued on next page)



An open fork-type loader on an HD-5 handles one of the over-size boulders common at the site. Extra payment is made for handling boulders ½-yard or larger.



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MODERN HEAVY-DUTY
DIESEL ENGINES



A McCormick disk, pulled by an Allis-Chalmers farm-type tractor, blends moisture into the soil after water has been applied to a lift.

The first stage of forming is being handled by crews working from three 10 x 20-foot rubber-tire work wagons. These double-deck wagons eliminate the need for men to climb ladders or clamber up steel as they set forms to a 24-foot height. American Econmobiles deliver a load of Symons forms to the work wagons, and four men, working on each of the two levels of a wagon, install and pin the sections in place. If forming has to go higher than 24 feet, the panels above this height are placed by the hydraulic booms of the Econmobiles.

To speed concrete placement on the first pour, holes are cut at 8-foot centers, approximately four feet above the bottom of the forms, so that the first 4 feet of concrete can be side-poured directly from truck mixers. After this ribbon of concrete has been placed, the vertical forms are filled in. Protex form oil is being used to keep the forms from sticking. Though heavy reinforcing steel has been difficult to place, particularly in the counterforted wall sections, Long's crews are handling the job smoothly so that work will not fall behind schedule.

Keeping the concrete-placing operation on schedule requires that about 200 cubic yards of this material be placed per day. Concrete is being supplied to this job by the No. 3 plant of General Concrete Co., a commercial outfit that is operating two commercial plants on a subcontractor basis at the academy site.

Concrete placement for the front wall concrete—excluding the 4-foot section that is being placed directly from truck mixers—is being handled by two Econmobiles with hydraulically operated concrete buckets. The back wall and portions of the counterforts are being placed by a Lorain Moto-Crane and transfer bucket. This crane is also being used on walls higher than 22 feet—the limit of the Econmobile's reach.

High-cycle electric vibrators are being used to consolidate the concrete, and Dart compressed-air vibrators are held on a standby basis. Though form stripping originally could not be done before 48 hours had elapsed, Long is stripping the forms in 36 hours, providing the weather remains favorable. Techkote white pigmented membrane is used for all curing.

The operations of Long Construction Co. have been marked by the best

safety program seen to date at the academy site. Workmen on this job are furnished a hard hat at company expense and safety shoes at cost. Safe working methods are enforced by each superintendent and foreman. On this job, one of the important rules they enforce is that sliding down the steep banks is prohibited. Safety bulletin boards have been set up and large banners conspicuously displayed to emphasize the importance of safety to each employee. Last year, the firm's safety program kept a number of workmen from being hurt and in addition paid real dividends, since it commanded a large refund in insurance premiums. The safety program at the academy site is merely a continuation of a policy that benefits both the firm and its employees.

As unusual as some other things about this job is that Long Construction Co. is doing the concrete work even though its bid was not the lowest and it was not awarded the contract. The Long firm bid the entire project in competition with T. F. Scholes, Inc., hoping to do the concrete work. Had Long Construction Co. been awarded the contract, it would probably—like Scholes—have subcontracted the dirt work. But after the Scholes firm was awarded the job on its low bid, negotiations were made that gave Long Construction Co. the portion of the work it had wanted in the first place.

Other contracts rush work

In addition to work under the Scholes contract, a number of other

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TEXACO

types of work are going on at the academy site at the present moment. The first increment of a primary road system at the site is held by Nowers Construction Co., Pueblo, Colo., and water-supply lines are being constructed by Wade Lahar Construction Co., Tulsa, Okla. Water reservoirs are being built by Matelich & Hanson Contractors, Inc., Englewood, Colo. The sanitary sewer system is being developed by J. S. Brown-E. S. Olds Plumbing & Heating Corp., Albuquerque, N. Mex. A second increment of the primary road system—a section totaling 15½ miles in length—is being put down by Jack Adams and Haake Construction Co., both of Santa Fe, N. Mex., while a relocation of U. S. 55-87 and control of Kettle and Pine Creeks are jobs being done by Mount

tain States Construction Co., Denver. By the end of this year, such utilities as water mains, the first increment of roads, reservoirs, and sewer lines, together with grading and foundations for the academic buildings and cadet quarters will be finished. Next year work will be in progress on the service and supply area, the school proper and housing area at the site, the reservoir and pump stations, the sewage-treatment lines, a perimeter fence, walkways and bridges, and telephone and electrical lines. Such buildings as the materiel complex, administration and shop quarters, Air Base group headquarters, a community theater, staff club, and rectories will also be under construction in 1957. The Cadet building, the academic complex, dining

hall, social center, community center complex, entrance facilities and fire station will not be completed until 1958, while the chapel, hospital, and nurses quarters will be among the last facilities constructed some time in 1959.

Personnel

All work at the academy is under the general supervision of Col. Albert E. Stoltz, director, Air Force Academy Construction Agency. His deputy is John P. Huebsch. General engineering is under the supervision of the firm of Skidmore, Owings & Merrill of Chicago.

Field supervision for the T. F. Scholes, Inc. contract is being handled by V. O. Purvis, Jr., project manager, who is assisted by Sam Musick as superintendent. W. D. Henry as proj-

ect engineer, and Mrs. G. N. McLaughlin, office manager. The Hooper dirt-moving spread is under the supervision of J. L. Phillips, and the operations of Long Construction Co. are under Joe E. Crawford, Colorado manager, and Arnold Gaunt, superintendent.

THE END

Circular concrete stairway links shopping center and rooftop parking area

One of the more unique features of Mondawmin—the \$10 million shopping center that opens this month in Baltimore, Md.—is the circular concrete staircase that connects the 5½-acre parking area on the roofs of the buildings and the shops themselves. Completed last month, the staircase is built over a 41-foot-diameter reflecting pool on the lower mall.

The complicated job of constructing the staircase was done by Greene Stair Builders, Philadelphia, Pa., at a cost of \$20,000. The stair-making specialist first built the form for the staircase around a drum, steaming the wood so that the required curves were formed. After the mold had been transported to the job site, re-erected, sheathed, and shored, reinforcing was placed.

Then a special mixture of marble-chip aggregate and white cement was used in the concrete to form the 5-foot-wide, 18-foot-diameter staircase. The stairway has an inner radius of 4 feet, an outer radius of 9 feet, and a vertical rise of 14 feet with 26 risers.

The huge facility, which has 500,000 square feet of shopping area for 60 stores and parking space for 4,100 autos, was constructed by William L. Crow Construction Co., New York, N.Y.

N. J. Turnpike extension links Newark Airport and Holland Tunnel

The Bayonne-Jersey City section of the New Jersey Turnpike's \$120 million Newark Bay-Hudson County extension opened about six weeks ago, providing a direct route from New York City to Newark Airport and virtually placing Bayonne and Jersey City on the turnpike. The extension, besides providing a direct express connection between the turnpike and the Holland Tunnel, is expected to play an important role in the development of more heavy industry and increased waterfront business in Hudson County.

The 8.2-mile extension is a six-lane highway, with a barrier-type median separating the three lanes of north and south-bound traffic. The speed limit on the section is 50 mph, and this will be reduced during bad weather or when emergency conditions exist.

The extension is expected to carry about 15,600,000 vehicles in 1957—its first full year of operation—when revenue is expected to amount to about \$5,020,000.

Tolls for the entire extension—between Newark Airport and the Holland Tunnel—are 35 cents for passenger cars; 50 cents to \$1 for trucks, depending on their size; and 70 cents for buses.



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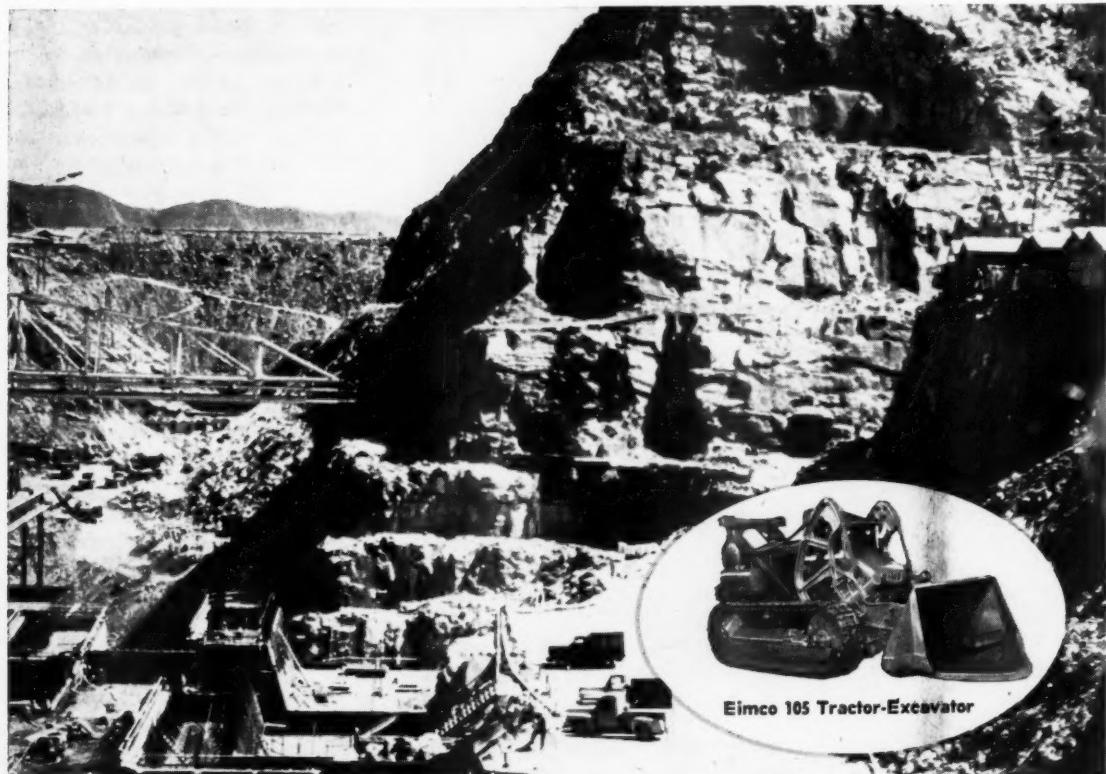
Lubricants and Fuels FOR ALL CONTRACTORS' EQUIPMENT

For more facts, use Reader-Reply Card opposite page 18 and circle No. 204



The International Amphitheatre, providing 370,000 square feet of space for exhibitors will be visited by 25,000 people, according to the ARBA.

Coming Road Show expected to be largest ever held



INDIA - EIMCO 105's KEEP GRUELING SCHEDULE

Two Eimco 105 Tractor-Excavators have each worked 8,000 hours in 12 months to keep progress on schedule at a huge dam project in India.

The machines have received intelligent maintenance and repairs have been small.

Eimco 105 Tractor-Dozer



At work on diversion, penstock and highway tunnels, trained Indian crews operating the 105's are doing an excellent job of tunnel driving. In some instances, advance for the size of tunnel being excavated may establish new world records.

"Eimco 105's are preferred equipment to use for tunnels of this type," says one official of a contracting firm. "The transmission, clutches and drive on both machines have not been touched in 8,000 hours of operation. They are in good condition and we expect them to last many more years."

Have you considered why the Eimco 105 is "preferred equipment" to contractors of huge dam, tunnel and road projects in the export market?

It's because their dependability is reflected through their engineered strength to stay on the job around the clock — day in and day out.

The Eimco 105's dependability eliminates the necessity of a sizeable parts depot. Eimco's are built to 100,000 hour standards for service in remote areas. Time saved by Eimco's working continuously with no down time for repairs is a big factor in selecting equipment.

Conditions being equal, Eimco 105's will produce more at less cost and in less time than comparative equipment. Let Eimco show you how this versatile unit can out-perform and out-work heavier, more expensive units.

See the Eimco 105 before you buy any crawler tractor equipment.

The eyes of the road-building industry are fixed these days on an event scheduled for next January 28 through February 2 at Chicago. And those dates are circled in red on many a desk calendar throughout the country.

The focal point of this industry-wide interest is the 29th ARBA Road Show, a gigantic exhibit of road-building machinery and materials to be held in conjunction with the 55th annual convention of the American Road Builders' Association.

The Road Show is expected to bring together at Chicago's International Amphitheatre the products of well over 300 manufacturers serving the highway construction and maintenance field.

An estimated 25,000 persons actively engaged in phases of this great industry are expected to visit the exhibit. These will include, besides members of ARBA, delegates to the concurrent Associated Equipment Distributors convention. Several thousand visitors from Canada and other foreign countries also are expected.

The 1957 Road Show is the latest in a long line of such exhibits sponsored by ARBA. The first Road Show was held in 1909 in Columbus, Ohio, with 40 exhibitors displaying their products before 1,000 delegates. Bigger and better exhibits were not long in coming, and at the last show, held on Chicago's lakefront in 1948, some 60,000 persons (the show was open to the public) saw the exhibits and demonstrations of more than 275 manufacturers.

The timely significance of next January's Road Show cannot be overestimated. With Congress last June approving the \$32.9 billion highway program, the nation is embarking on the greatest era of road-building in world history. Next year will see the initiation of the first major projects in this 13-year highway and road improvement program.

One-third for equipment

More specifically, the exhibit of road-building equipment is pertinent because one-third of every dollar appropriated for this program will be spent on new equipment and materials.

Naturally then, contractors, engi-

THE EIMCO CORPORATION
Salt Lake City, Utah—U.S.A. • Export Offices: Eimco Bldg., 52 South St., New York City

New York, N. Y. Chicago, Ill. San Francisco, Calif. El Paso, Tex. Birmingham, Ala. Duluth, Minn. Kellogg, Ida. Baltimore, Md. Pittsburgh, Pa. Seattle, Wash. Cleveland, Ohio. Houston, Texas. Vancouver, B. C. London, England. Gateshead, England. Paris, France. Milan, Italy. Johannesburg, South Africa



B-214

For more facts, use Reader-Reply Card opposite page 18 and circle No. 205

provided
space for
25,000



Chicago's lakefront, scene of the 1948 show, was represented by 275 exhibitors and attended by all segments of the road-building industry.



The 1930 Road Show, held in Atlantic City, N. J., with equipment of 162 manufacturers, was held indoors during the month of January.

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neers, highway officials, and others concerned with this vast construction program will be more than ever interested in the new equipment that will bring speed and economy to the road-building program.

The Road Show is being staged by the Construction Industry Manufacturers Association, the manufacturers' division of ARBA. Various committees have been at work for several months arranging such details as allocation of exhibit space, housing for delegates, program features, and publicity.

Probably the biggest problem connected with staging the show is the allocation of space in the exhibit hall. Months ago manufacturers began clamoring for large blocks of space to show their latest machinery to good advantage. With preference based on length of membership in CIMA and the support a particular manufacturer has given to the organization, space within the 300,000-square-foot amphitheatre was allocated. Serious space problems apparently were limited to about 10 per cent of the exhibitors; though there were some dissatisfied exhibitors, the committee obviously did a very creditable job.

Then, about midsummer, ground was broken for an addition to the amphitheatre. Scheduled for completion in December, this new section will provide an additional 70,000 net square feet of exhibit space. Consequently, the space allocation committee is trying to reallocate space so as to give more exhibitors additional room—and the right kind of room—for their displays.

Compact show

Unlike the 1948 show, held along a 30-acre stretch of parade ground on Lake Michigan, next January's show will feature no demonstrations of equipment. Although this limits exhibitors to showing the operation and application of their equipment by cutaway exhibits, models, motion pictures, or literature, it does mean that a highly compact show will make it easier for visitors to see all the equipment.

Machinery to be displayed is expected to arrive at the amphitheatre
(Concluded on next page)

For more facts, circle No. 206→

EXTRA VALUE... IN A $\frac{1}{2}$ -YD. MACHINE!

THE LORAIN 15



EXTRA HOE VALUES! — Buckets from 24" to 40" ($\frac{3}{4}$ yd.) — 2 Boom lengths — 14' and 16'.

Though nominally rated as a $\frac{1}{2}$ -yd. machine, the extra weight, strength and stability of the Lorain-15 enable it to match the productive capacity of many higher rated, more costly machines. As a shovel, hoe or dragline, it can do those extra-size jobs... with long life... freedom from operating delays... at greater profit to you. The Lorain-15 proves these points... if you will check the brief listing of features below and then check with your Thew-Lorain Distributor, you will see what we mean by "extra values." You make the comparison—then decide!

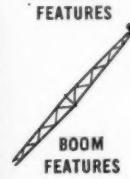
BIG-TIME FEATURES in the $\frac{1}{2}$ -yd. L-15



TURNTABLE FEATURES



CRAWLER FEATURES



BOOM FEATURES

- 5 identical interchangeable shoe clutches • One-piece, all-welded, truss-reinforced, rigid turntable bed • 19 anti-friction bearings on power shafts and clutch drums alone • Oil-enclosed cut gears • "E-Z" operating controls—effortless action; fast response; longer clutch life • "Hydra-Ease" power control of crawler steering, tread lock, house lock, and shifting of swing-travel jaw clutches.

- 16" cast-steel tread shoes—22" & 29" available • Oil-enclosed crawler travel mechanism • 4-way position tread and travel lock, hydraulically powered and operated • Replaceable tread pin bushings available.
- Usable as shovel, crane, clamshell, dragline, hoe • Crane boom of square-tubular-chord design; minimum weight, maximum capacity and reach • Power load lowering standard • Ability to "back-down-the-load" • Precision boom lowering device for cranes • Independent crawler travel available—a big help in drag and hoe operations. Permits simultaneous hoist, swing and travel.



EXTRA CRANE BOOM VALUES! — For dragline, clamshell and lifting service feature new square-tubular-chord boom that permits maximum lifting capacities, greater digging ranges.

THE THEW SHOVEL CO., Lorain, Ohio

THE LORAIN

(Continued from preceding page)

by rail and over the highway. The amphitheatre is equipped with a rail yard, but manufacturers will be urged to ship their equipment by motor freight whenever possible so as to avoid overtaxing the facilities of the amphitheatre yard.

Elaborate plans for all phases of this Road Show, including a package deal for such things as all services and elaborate decorations, have been made under the supervision of William H. Hogan, Road Show general manager. A former professional showman and in recent years an industrial showmanship expert, Hogan has undertaken to make the 1957 Road Show a model of future industrial exhibits.

Blue and gold draperies will cover all wall and pillar areas in the amphitheatre. The highway theme will be carried out in the marking of exhibit areas; aisles will be designated as highways, avenues, streets, and so on. Standards and highway markers will guide the visitors to particular booths, and exhibitors' names will be prominently displayed on markers suspended from the ceiling.

It is expected that a considerable amount of new equipment will be displayed at the show.

The show will have about two weeks in which to move into and get set up in the amphitheatre, and about five days following the closing to move out. These operations alone will require careful timing and coordination, and Hogan will have a large battalion of workers on hand to uncrate the equipment, move it into the hall and set it up, and to dismantle exhibits and move the equipment out once the show is over.

Much behind-the-scenes planning is occupying the attention of the men who are assuming the responsibility for making this Road Show, a Pageant of Progress in Construction Machinery.

THE END

Miller Spreader names two for research and design

Miller Spreader Corp., Youngstown, Ohio, has created a Research and Design Department. Heading this new department are Robert L. Wymer, Jr., the chief industrial engineer, and Jack Foster, chief design engineer.

Wymer's duties will include, in addition to research and new product design, production control, raw material and finished parts inventory control, estimating, and machine scheduling. Formerly, he was with the Republic Steel Corp. and the Lone Star Steel Co.

Foster, with 15 years' practical experience in the asphalt industry, will be responsible for experimental research work, plus jig fixture and tool design.

Seaman-Andwall appoints

Seaman-Andwall Corp., Milwaukee, Wis., has named M. J. Trainor zone manager for Texas and Oklahoma to work with the firm's distributors and road contractors in the Southwest.

Reminds me of your mother . . . and her big mouth!



Dual drives

■ Dual drives are described in literature from the F. A. B. Mfg. Co. A diagrammatic picture points out the features of the drives—single-point suspension, parallelogram torque rods, and matching axles. Data is also included on dual drives with power-takeoff transfer case for mixer drives. Additional literature contains information on the firm's radius rods, front-wheel drives, and axles.

To obtain the literature write to the F. A. B. Mfg. Co., 1249 67th St., Oakland 8, Calif., or use the Request Card that is bound in at page 18. Circle No. 53.

Need data on equipment? See card at page 18.

IT'S HERE!

THE BIG ADVANCE IN 2-WAY RADIO

Bendix

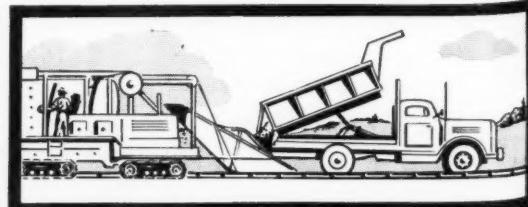
DYNA-COM

... and here are 10 ways it helps CONTRACTORS and BUILDERS save money

Coordinates men and equipment ★ Speeds repairs
Expedites orders faster ★ Cuts no-load miles ★ Improves operator's morale ★ Controls field operations
Cuts down-time ★ Enables equipment to be shifted quickly from one site to another ★ Helps meet emergencies in minimum time ★ Eliminates vehicle messenger miles

Good communication is vital in keeping projects running smoothly and in meeting construction deadlines. And that's just what Bendix Dyna-Com Radio gives you. Good, clear, dependable communications. Radio contact frees superintendents and field foremen from extra miles driving making routine checks. It allows them to spend more time at critical points where they are needed most. Bendix Dyna-Com Radio provides the instant voice contact between key personnel that results in smoother, more efficient operation. It prevents duplication of work effort, eliminates lost time for both men and equipment.

FROM SUPPLY BASE TO CONSTRUCTION SITE Bendix 2-Way Radio performs many time-saving functions from supply base to construction site. In addition to solving traffic control problems, it enables you to put equipment where it is needed most in minimum time. Loading tie-ups are avoided, material flow boosted over-all efficiency.



CONTRACTORS AND ENGINEERS



Exterior curtain walls of the Lutheran Brotherhood Building, Minneapolis, Minn., consist of 768 porcelain and glass panels. Frames are made of stainless steel.

Hose flexibility speeds curtain-wall construction

A portable caulking rig that not only kept pace with the erector crews but also effected savings on materials helped in speeding the installation of curtain walls on the Lutheran Brotherhood Building in Minneapolis, Minn. As soon as crews had fitted the 14-foot x 4-foot 5-inch porcelain panels in place, calking and waterproofing of seams and joints were done immediately to prevent any possible moisture infiltration.

A spray gun equipped with a nozzle extension to pinpoint the flow of material was used to direct a narrow,

continuous ribbon of caulking compound into the joints between the curtain-wall panels and the building frames. Waste of materials was kept to a minimum.



The caulking operator keeps material loss to a minimum by using a spray gun equipped with a nozzle extension.

NEW!

NEW!

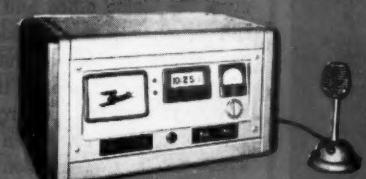


Dyna-Com Mobiles Cover all frequency ranges: 25-54 mc; 144-174 mc; 450-470 mc. Available in power outputs from 15 to 60 watts. Interchangeable between 6 and 12 volt vehicles without modification.

Dyna-Com Portables Greater versatility and flexibility than any other portable equipment. Compact, lightweight, full 1-watt output. Extra-long battery life. Complete line of accessories including a transistorized, plug-in loud-speaker.

NEW!

NEW!



Dyna-Com Consoles and Base Stations For 25-54 mc; 144-174 mc; 450-470 mc; delivering from 20 to 60 watts output. Operate from 117 volt AC power lines. Quality engineered for performance and appearance.

Bendix Bantam For low-power, limited range application as a mobile unit or base station. Provides more than 1-watt power output. Operates from 6, 12, 24, 32 volts DC or 117 volts AC without modification or costly converters. Adds flexibility to any communications system.

COMPLETE NEW LINE OF PRECISION-BUILT FM MOBILE UNITS AND BASE STATIONS FOR ALL FREQUENCIES!

The result of over 5 years laboratory research and development, Bendix Dyna-Com is the first big advance in 2-way radio in over a decade. All new from chassis to cabinet, each model incorporates all the latest improvements which have made Bendix the foremost leader in railroad and aviation communications; in airborne navigation; in radar and in military electronics.

For example, Dyna-Com's unitized design sets a new standard for performance and dependability. It features plug-in, interchangeable chassis construction which speeds service and saves maintenance costs. Any chassis in the Dyna-Com line can be transferred, without adjustment or modification, between mobile units and base stations.

Bendix Radio

DIVISION OF BENDIX AVIATION CORPORATION BALTIMORE 4, MD.

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 207

OCTOBER, 1956

Find out how Bendix Dyna-Com can boost the efficiency of your organization. Let a Bendix Communications Engineer survey your communication needs without obligation. Call or mail the coupon today for full information on Dyna-Com—the first big advance in 2-way radio!

*Reg. U. S. Pat. Off

Bendix Radio
Mobile Sales, Dept. G
Baltimore 4, Md.

Gentlemen:

Please send me complete details about Bendix Dyna-Com 2-Way Radio.

25-54 mc. 450-470 mc.
 144-174 mc. Bantam Portable

Name _____

Title _____

Firm _____

Street _____

City _____

State _____

Hydraulic drill

A hydraulically powered drill makes vertical or horizontal bores under highways, according to a bulletin from the manufacturer, Mobile Drilling, Inc. Designated the Model B-40, the unit is shown to be adapted for power-takeoff mounting on trucks and tractors. A list of features of the unit states that the drill has a 360-degree-angle range, is one-man operated, and is suitable for core drilling with air or water.

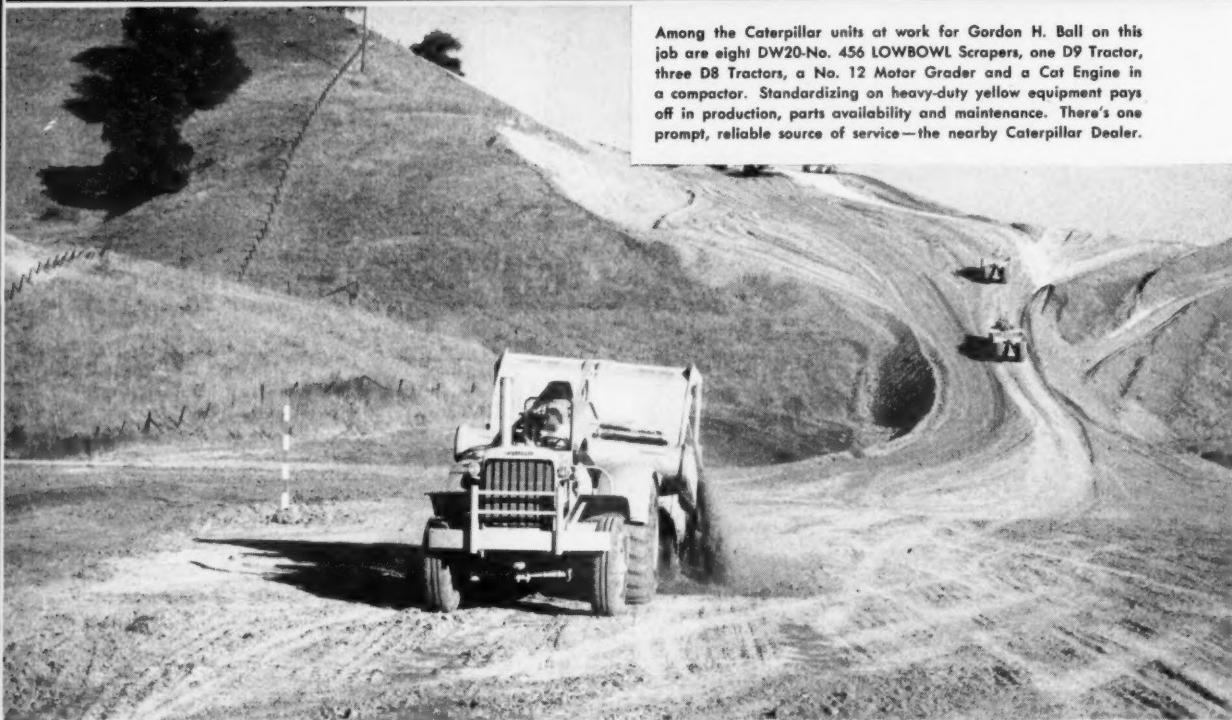
To obtain the bulletin write to Mobile Drilling, Inc., 960 N. Pennsylvania St., Indianapolis 4, Ind., or use the Request Card at page 18. Circle No. 63.

A special section devoted to winter construction work and its problems begins on page 50 of this issue.

Number, file systems make it easy to keep tabs on firm's equipment

by JACK WARD, construction engineer
Montgomery, Ala.

New CAT* **LOWBOWL** Scrapers handle big production on California highway job



Among the Caterpillar units at work for Gordon H. Ball on this job are eight DW20-No. 456 LOWBOWL Scrapers, one D9 Tractor, three D8 Tractors, a No. 12 Motor Grader and a Cat Engine in a compactor. Standardizing on heavy-duty yellow equipment pays off in production, parts availability and maintenance. There's one prompt, reliable source of service—the nearby Caterpillar Dealer.

Working on the construction of a 2.6-mile bypass near Lafayette, California, Gordon H. Ball has eight new four-wheel Cat DW20-No. 456 LOWBOWL Scrapers handling the job, estimated at 1,500,000 cu. yd. The material is sandstone clay. Mr. Ball, whose company has used Caterpillar equipment for 35 years, is more than satisfied with the production of the LOWBOWL units. They are moving about 10,000 cu. yd. in an eight-hour day.

On job after job, you hear similar reports about new Cat LOWBOWL Scrapers. When matched against competitive units under identical conditions, these rigs have delivered bigger, faster loads. Here's why: The No. 456's LOWBOWL design loads more material with less resistance clear to the end of the loading cycle for quicker heaped loads. And the DW20's new 300 HP (maximum output) Turbocharged 6-cylinder engine delivers 10% more rimpull and a top speed of 32.1. There's power aplenty for hauling heavy loads and for fast round trips, even against adverse

grades. Another plus: New tubeless tires on scraper and drive wheels, available at no extra cost, eliminate an estimated 30% of down time caused by tires.

Besides the four-wheel DW20-No. 456, there's a two-wheel DW21-No. 470. Both LOWBOWL Scrapers are cable-operated and have a capacity of 25 cu. yd. heaped and 18 cu. yd. struck. Both are ruggedly built to move more earth faster at lower cost with less down time. For facts and figures about LOWBOWL superiority on actual jobs, see your Caterpillar Dealer. Name the date—he'll be glad to demonstrate!

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

**BIGGER, FASTER
LOADS WITH CAT
LOWBOWL SCRAPERS**

Equipment supervisors, purchasing agents, and others are constantly plagued by the problems of identifying individual items of equipment and keeping an accurate and efficient inventory of machines on hand. These men may find help in numbering and inventory systems, most practical because they are simple, which I have developed in the course of 10 years' association with heavy construction firms.

Experience and observation in both field and office showed me the need for both the identification system, and an accurate inventory system that would pinpoint the job location of equipment. These were two administrative procedures that were badly neglected; time was lost in finding serial numbers of machines when parts had to be ordered, and the location and availability of equipment items often had to be determined by guesswork.

The numbering system for identifying equipment assists in cost accounting, and the inventory system gives the home office and job office full equipment details—such as the age of the rig, serial number, and rental rate—and makes it easy for anyone to keep track of any machine. Two companies I have been associated with—Texas Construction Co. and Blount Bros. Construction Co., Montgomery, Ala.—have adopted the systems in their home offices, and both systems have even found their way into use on large joint-venture projects.

Numbering system

The construction and maintenance equipment-numbering system has each individual piece of equipment identified by a four-digit number. The first two digits identify the "family" or "group" to which the item belongs, and the last two digits identify the piece itself.

The "group" number for mixers and pavers, for instance, is 60. If a certain paver is given the individual number, 27, the equipment number for the paver is 6027. Scrapers have 24 for a "group" number. A scraper with 12 as its individual number is listed as 2412.

No decimal points, dashes, parentheses, letters, or symbols are needed to identify any piece of machinery. Either the group digits, the two digits identifying a particular item, or the entire equipment number can be readily used in a cost-account code system. In this way, costs may be easily maintained on an individual basis, a group basis, or both.

There are nine groups of equip-

←For more facts, circle No. 208

All information on a piece of equipment is carried on one side of this card, which is made out in triplicate. One copy is filed by job location, and one by equipment group. The third copy, with a repair record on the reverse side, accompanies the equipment to a job site.

T.C.C. NO.	C.P.C. NO.	DATE	LOCATION, BY JOB	TRANSFER DATE
MAKE		CAP. OR SIZE		
MODEL				
SERIAL NO.				
KIND OF POWER				
MAKE OF ENGINE				
ENGINE MODEL				
ENGINE SERIAL NO.				
WEIGHT				
VENDOR				
P.O. NO. AND PRICE				
DATE PURCHASED				
NEW OR USED				
YEAR MANUFACTURED				
RENTAL RATES		DAY	WEEK	MONTH
ATTACHMENTS AND REMARKS				
T.C.C. NO.		DESCRIPTION		C.P.C. NO.

ment, and ten classifications in each group for the various items of equipment. Individual numbers for each piece of equipment, added to the group numbers, make up the four-digit number. The group numbers are:

- 10-19, Cranes, derricks, draglines, shovels, revolvers:
- 10 Cranes, crawler
- 11 Derricks
- 12 Draglines, crawler
- 13 Shovels and hoes, crawler
- 14 Revolvers
- 15 Cranes, motor
- 16 Trenchers and loaders
- 17 Dragline buckets
- 18 Shovel and hoe buckets
- 19 Clam, orange peel, other buckets
- 20-29, Tractors, scrapers, rollers, patrols, dozers, control units, tractor-trailers:
- 20 Tractors, crawler, rubber-tire
- 21 Dozers and push blocks
- 22 Power control units
- 23 Tractor-trailer units
- 24 Scrapers
- 25 Sheepfoot, other rollers
- 26 Motor patrols and graders
- 27 Scarifiers, plows, disks, rippers
- 28 Ditchers
- 29
- 30-39, Barges, dredges, boats, marine motors, and engines:
- 30 Dredges
- 31 Barges
- 32 Boats
- 33 Marine motors and engines
- 34
- 35
- 36
- 37
- 38
- 39
- 40-49, Trucks, pickups, cars, and gas and diesel engines:
- 40 Flat-bed trucks
- 41 Dump trucks
- 42 Semi and low-bed trucks
- 43 Pickups
- 44 Cars
- 45 Gas and diesel engines
- 46 Dump bodies (trucks under 41)
- 47 Water trucks
- 48 Locomotives
- 49 Airplanes
- 50-59, Hammers, hoists, leads, followers, pumps, boilers:
- 50 Hammers and extractors
- 51 Hoists
- 52 Leads
- 53 Pumps
- 54 Followers
- 55 Boilers and heaters
- 56 Wellpoint systems
- 57 Car pullers, winches
- 58 Jets
- 59
- 60-69, Mixers, pavers, batchers, (Concluded on next page)

Another step ahead in Backhoe Design

SHAWNEE® Chief

MODEL "D90" BACKHOE

with Exclusive

PUSH-PULL POWER

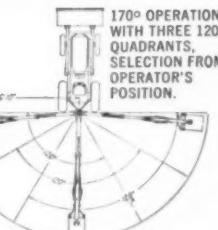
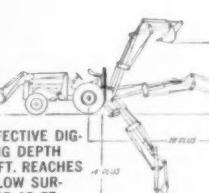


DIGS
14 FEET
DEEP!

SHAWNEE
PUSH
PULL
POWER

170°
OPERATION
WITH THREE 120°
QUADRANTS,
SELECTION FROM
OPERATOR'S
POSITION.

EFFECTIVE DIG-
GING DEPTH
14 FT. REACHES
BELOW SUR-
FACE 15 FT.



Individually controlled hydraulic "feet" level the machine quickly for plumb digging. 4-pin suspension makes mounting or dismounting easy-fast.

Write for Additional Information

SHAWNEE manufacturing co., inc.
1947- M N. TOPEKA AVENUE • TOPEKA, KANSAS

management

hoppers, conveyors, unloaders:	76	Wood-working tools, wrenches
60 Mixers and pavers	77	Gasoline tampers
61 Crushers	78	
62 Batchers and batch plants	79	
63 Silos, bins, hoppers	80-89	Welders, saws, paint, sandblasters, generators, drills, grinders:
64 Conveyors	80	Welders
65 Unloaders and chargers, cement	81	Saws
66 Concrete buckets, carts, buggies	82	Paint outfit, sandblasters
67 Pumpercrete, gunite, grout outfits	83	Gas, diesel-electric sets
68 Scales	84	Shop drills, reamers, sanders, etc.
69 Vibrators	85	Electric motors
70-79, Compressors, air tools:	86	Lubrication units
70 Compressors	87	
71 Jackhammers, pavement breakers	88	
72 Wagon drills, stoppers, drifters	89	
73 Tamers and spades	90-99	Office engineering:
74 Riveters and busters	90	Calculators
75 Chipping hammers	91	Adding machines
	92	Typewriters
	93	Levels

94	Transits
95	Cameras
96	Safes
97	
98	
99	

Some contractors and maintenance agencies may not have to use all the group numbers in this system. However, the list indicates the general scheme of the setup, which may be modified to suit a firm's needs. Groups may be consolidated or expanded, and equipment not on the list can easily be added to appropriate groups.

Equipment inventory system

Keeping tabs on equipment is easy with an efficient, central office inventory setup that uses a Kardex visual filing system. This requires cards,

made in sets of three. These cards have spaces for the make, model and serial number of the machine; spaces for the make, model, and serial number of the engine; and spaces for such information as price, date of purchase, and rental rates by day, week, or month.

In the upper left hand corner are two spaces, labeled T.C.C. for The Contractor's Company and C.F.C. for the Contractors Financial Company. These are used by firms requiring special numbers for a separate financing setup. The right half of the card has two columns of space, one for "Location, by Job" and the other for "Transfer Date". This is used to record the movement of a particular piece of equipment.

In the central office, two of the three copies are filed in a Kardex in two ways: first, by job or location, second, by group or type of equipment. Anyone using the first filing system can find out just what equipment is working on a particular job. Anyone can determine just where all the firm's tractors are working by turning to the other Kardex, in which the tractor group's cards are assembled. The reverse side of central office copy cards may be used for a depreciation record of each machine.

Cards in the group file remain unchanged, but cards in the job file are moved as equipment is moved from job to job. A simple designation—or perhaps a small red tab—may be attached to cards to show that equipment is available for transfer or is in the "available pool".

The third copy of the card, a cardboard copy, is kept with the equipment—either in the field office or shop. On the reverse side of this copy is a "Record of Repairs" for an individual item.

The inventory system is supplemented by a form, executed by the shipping and receiving personnel at the jobs, noting details of the equipment, and either its shipment or receipt. Copies of this form are mailed from the field office to the central office so that the central file can be kept up to date.

THE END

PERFECTION Steel Dump Body hauls



QUARTZ ROCK, 25 TON LOADS... Off-Highway at Kansas Dam Site!

22' Perfection Rock-Slag Dump Body, 170" Stroke, Perfection Telescopic Hoist, photographed in action, on the job.

ROUGH JOB!

The Webster Dam unit (at Bogue, Kansas) of The Pick-Sloan Missouri River Flood Control Project demanded heaviest duty hauling under punishingly rugged conditions.

TOUGH REQUIREMENTS!

Large payloads, fast cycles, and minimum down time were required if the hauling contractor was to realize the profit figured in his bid.

PROTECT YOUR PROFITS. DEPEND ON PERFECTION TO DESIGN AND BUILD TRUCK BODIES AND HOISTS FOR ANY AND ALL YOUR CUSTOMERS' HAULING REQUIREMENTS,

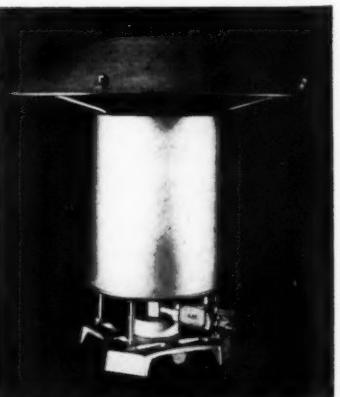
Your nearby distributor stocks many different standard types, with fast factory service on special custom types. See him, and

PERFECTION FILLS THEM!

Lester Oborny, successful bidder, depended on Perfection Bodies and Hoists to do the job. 22 cubic yard body capacity permitted 25 ton payloads. Extra rugged body construction took all the punishment of grueling loading impact; body and hoist performed rapidly and efficiently in dumping, allowing an average of 21 ten mile cycles daily. Here, as usual, Perfection equipment functioned dependably to assure the contractor's performance per contract—and to his profit.

Salamander distributes heat in all directions

■ An improved version of its LP gas salamander line that distributes heat equally in all directions is announced



The improved Weldit Model 900 LP gas salamander features the Thermo-Disc that intensifies the heat and increases the radiation efficiency.

CONTRACTORS AND ENGINEERS

The PERFECTION STEEL BODY Co.

TRUCK BODIES AND HYDRAULIC HOISTS

GALION, OHIO

U.S.A.

Distributors in all principal cities.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 210

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by Weldit, Inc. Among the modifications is a change in the shape of the Weldit Flame Dome and the addition of the Thermo-Disc.

The Flame Dome provides for the 360-degree distribution of the heat. The Thermo-Disc, made of malleable iron and located directly over the flame on the underside of the Flame Dome, intensifies the heat and adds to the efficiency of the radiation, according to the manufacturer.

The new salamanders are available in three models: No. 800, high-pressure, floor-type; No. 1850, high-pressure, tank-type; and No. 900, low-pressure, floor-type with automatic safety shut-off.

For further information write to Weldit, Inc., 998 Oakman Blvd., Detroit, Mich., or use the Request Card at page 18. Circle No. 159.

Purolator forms technical service department

Purolator Products, Inc., filter manufacturers of Rahway, N. J., has formed a new Technical Service Department to provide fast field sales engineering service to its customers.

The new department is headed by Herbert R. Otto, Jr., formerly chief engineer for the company.

Replacing Otto as chief engineer for the firm is Frederick R. Gruner, former vice president in charge of operations for the Warren Foundry & Pipe Corp., Dover, N. J.

Garrison starts operating from new California plant

Garrison Manufacturing Co., Inc., designer and manufacturer of hydraulic power steering equipment, and developer of foundation study and pile-loading testing equipment used by California and other states in the construction of bridges and freeway approaches, is operating from a new plant in East Los Angeles.

The plant, at 4609 E. Sheila St., is a brick and concrete structure housing both offices and manufacturing facilities. Located on a one-acre site, the plant has been designed so that it can be expanded as the company grows.

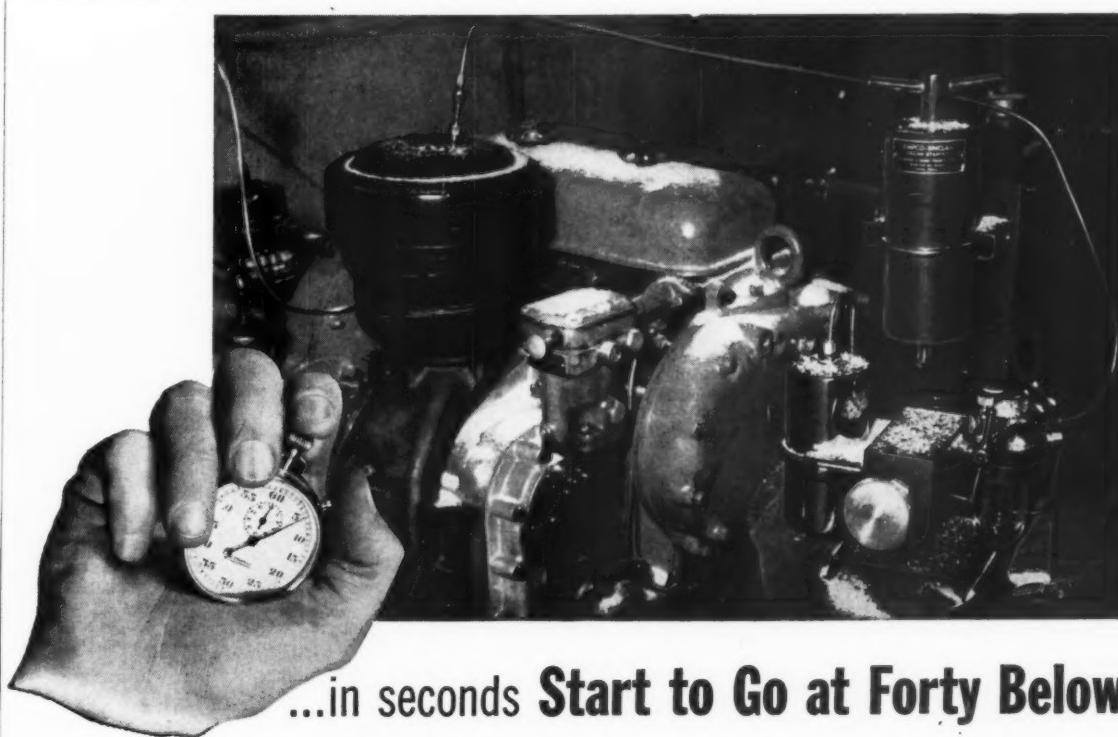
The power steering equipment made by Garrison is used by leading manufacturers of trucks, truck cranes, motor graders, and industrial material-handling equipment.

Hyster promotes three

The new supervising engineer of patents and product analysis for Hyster Co., Portland, Oreg., is Robert C. Shoemaker. Until his appointment, he had been supervising engineer of construction machinery. Shoemaker introduced a number of innovations in construction equipment since joining Hyster in 1939.

R. Richard Hazel, former supervising engineer of the Tractor Equipment Division, is now supervising construction machinery design section. Ronald A. Johnson, supervising engineer in charge of the standards division, has been assigned the IBM engineering and catalog files.

BY OBSERVING JUST A FEW SIMPLE PROCEDURES, owners of Cleveland trenchers will find that their rigs will give them just as efficient service in the winter as during other times of the year, according to the manufacturer. Since deeply frozen ground causes more wear on rotor tips or digging teeth, care should be taken to use the proper type of Presto tips for the particular soil conditions that are encountered and teeth should be promptly replaced when they show signs of wear. In freezing temperatures, precautions need to be taken to prevent parts of the trencher from freezing to the ground. At the end of the day, the bucket should be cleaned out thoroughly, the digging wheel should be lifted out of the trench so it won't freeze to the trench bottom, and the entire rig should be run up onto planks to prevent the crawler tracks from freezing to the ground. The lubricants used in the hoist, conveyor, and crawler transmissions should be changed more frequently to minimize sludging. The same care should be given to the engine as is given to any internal combustion engine during the winter. For more information about winter maintenance of Cleveland trenchers write to the Cleveland Trencher Co., 20100 St. Clair Ave., Cleveland 1, Ohio, or use the Request Card at page 18. Circle No. 173.



...in seconds Start to Go at Forty Below with new AMPCO-SINCLAIR ENGINE STARTER

The AMPCO-SINCLAIR ENGINE STARTER represents an entirely new approach to effective starting fluid utilization. In diesel and gasoline engines of up to 1,000 cu. in. displacement (adjustable for larger engines), it works automatically in injecting the right amount of starting fluid at the proper rate of fluid flow. It eliminates the "human element"—provides fast, positive starting even by inexperienced operators!

IMPORTANT TECHNICAL FEATURES —

- Completely automatic metering device.
- A closed pressurized circuit which eliminates fumes and fire hazards.
- Utilization of aerosol principle as opposed to solid starting fluid injection.
- Designed to give a diminishing starting fluid/air rate after starting to sustain combustion.
- Designed to receive a sealed can of starting fluid to eliminate pouring.
- Rugged construction with a minimum of moving parts for simplicity.
- Controls large enough for manipulation with gloved hands.

ONLY THE AMPCO-SINCLAIR ENGINE STARTER PROVIDES —

- Positive starts at temperatures as low as -40°F.
- Prevention of harmful detonation through automatic metering.
- Foolproof operation even with inexperienced operators.
- Complete safety.
- Up to 60 individual starts (at an average of less than 5¢ per start) with a 10-oz. can of SINCLAIR STARTING FLUID.

For information, write

SINCLAIR REFINING COMPANY

Technical Service Division

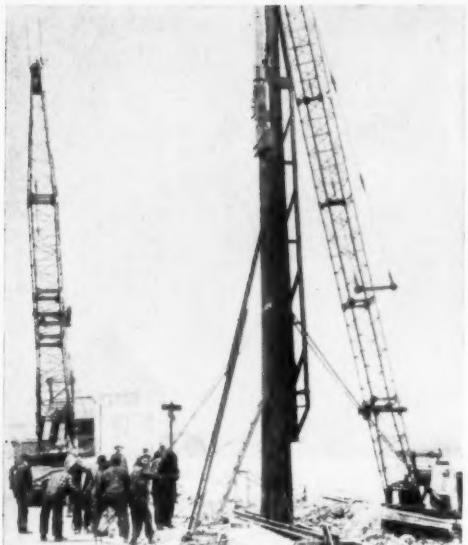
600 Fifth Avenue, New York 20, N.Y.

AUTOMOTIVE AND MARINE PRODUCTS

CORPORATION

87 Harvard Avenue
Boston 34, Mass.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 211



THOUGH THE TEMPERATURE IS BELOW THE ZERO MARK, this Delmag diesel pile hammer had no trouble driving sheet piling during a snowstorm in Duluth, Minn., last winter. Because the rig is self-contained and needs no outside power source, there is no problem of freezing air, water, or steam lines. The Delmag hammer is available in three sizes, each of which is said to weigh about 50 per cent less than equivalent steam or air units. Because of this, and the fact that there is a minimum of vibration during operation, the use of lightweight leads is possible. While standard fixed and swinging leads can be easily adapted for use with the Delmag, the distributor points out that special leads can be constructed economically, eliminating the unnecessary side ribbons of conventional leads. For more information about this imported pile hammer write to the Foundation Equipment Corp., 100 Elizabeth St., Newcomerstown, Ohio, or use the Request Card at page 18. Circle No. 149.

Hyster names manager of Washington office

The Hyster Co., Portland, Oreg., has appointed Richard M. Ervin as manager of the Washington, D. C., office and as district manager of the firm's east-central industrial-truck division. In his new position, Ervin will represent both the industrial truck and tractor-equipment divisions.

Ervin succeeds Robert E. Lange, who has been assigned as resident manager of Hyster's subsidiary plant in São Paulo, Brazil.

Power sod cutter handles 8 square yards per minute

■ A power sod cutter that will cut at the rate of 8 square yards per minute is announced by the Ryan Landscaping Equipment Co. A blade for loosening soil in compacted areas is also available.

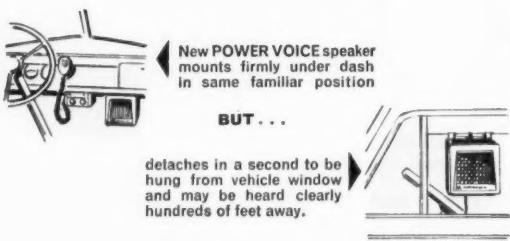
The Ryan Jr. has a 12-inch blade



Now... Talk through noise NEW TRANSISTORIZED POWER VOICE speaker



The secret is in the exclusive "GOLDEN HEART" transistor



New POWER VOICE speaker mounts firmly under dash in same familiar position
BUT...
detaches in a second to be hung from vehicle window and may be heard clearly hundreds of feet away.

MOTOROLA... always FIRST with the NEWEST in TRANSISTORIZED EQUIPMENT

MOTOROLA
2-WAY RADIO

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 212

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Please send me more information on the new Power Voice Speaker.

I want to hear a demonstration of the Power Voice Speaker.

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Preloading washers

■ Standard Pressed Steel's preloading indicating washers automatically control tightening of bolted connections and permit accurate preloading to as high as 80 per cent of bolt yield strength, according to a catalog. A picture shows the two concentric steel rings sandwiched between two close-tolerance washers. Charts give the specifications of washers to be used when loads of from 80,000 to 180,000 psi minimum are to be applied.

To obtain Catalog No. 2165 write to Standard Pressed Steel Co., Jenkintown, Pa., or use the Request Card at page 18. Circle No. 87.

Sherman Products news

Eli R. Lupin has been named chief of the newly created engineering and development division of Sherman Products, Inc., Royal Oak, Mich.

Lupin was formerly an hydraulic engineer with Studebaker-Packard Corp.

CONTRACTORS AND ENGINEERS

Convention calendar

October 15-17 American Bridge, Tunnel, and Turnpike Association, Inc.

Meeting, Broadview Hotel, Wichita, Kans. John Allyn Stearns, secretary, ABTA, Box 748, White Plains, N. Y.

October 15-19 American Society of Civil Engineers

Pittsburgh Annual Convention. William Penn Hotel, Pittsburgh, Pa. Don Reynolds, assistant to the secretary, ASCE, 33 W. 39th St., New York, N. Y.

October 22-24 National Lubricating Grease Institute

Meeting, Edgewater Beach Hotel, Chicago, Ill. T. W. Miller, executive secretary, NLGI, 4638 Nichols Parkway, Kansas City 12, Mo.

October 22-26 National Safety Congress and Exposition

Meeting, Conrad Hilton Hotel, Chicago, Ill. R. L. Forney, secretary, NSC, 425 N. Michigan Ave., Chicago 11, Ill.

October 24-25 American Concrete Institute

Meeting, Mount Royal Hotel, Montreal, Quebec, Canada. William A. Maples, secretary-treasurer, ACI, 18263 W. McNichols Road, Detroit, Mich.

October 24-25 National Slag Association

Meeting, Sheraton-Park Hotel, Washington, D. C. E. W. Bauman, managing director, NSA, 613 Perpetual Bldg., Washington 4, D. C.

October 25-26 National Society of Professional Engineers

Fall Meeting, The Greenbrier Hotel, White Sulphur Springs, W. Va. Ross Johnston, executive secretary, NSPE, West Virginia Society of Professional Engineers, Box 249, Charleston, W. Va.

October 29-31 American Concrete Pipe Association

Sixth Annual Short Course of Instruction, Chase Hotel, St. Louis, Mo. Howard F. Peckworth, managing director, ACPA, 228 N. LaSalle St., Chicago, Ill.

October 29-November 1 American Institute of Steel Construction

Meeting, The Greenbrier Hotel, White Sulphur Springs, W. Va. L. A. Post, executive vice president, AISC, 101 Park Ave., New York 17, N. Y.

November 12-19 American Concrete Pressure Pipe Association

Eighth Annual Convention and Meeting, Castle Harbour Hotel, Tucker's Town, Bermuda. Howard F. Peckworth, managing director, ACPPA, 228 N. LaSalle St., Chicago 1, Ill.

November 14-16 Virginia Highway Conference

Meeting, Virginia Military Institute, Lexington, Va. R. P. Ellison, executive assistant, VHC, 1221 E. Broad St., Richmond, Va.

November 25-30 American Society of Mechanical Engineers

Annual Meeting, Hotel Statler, New York, N. Y. D. B. MacDougall, ASME, 33 W. 39th St., New York 18, N. Y.

November 26-27 Wire Reinforcement Institute, Inc.

Meeting, The Jung Hotel, New Orleans, La. Frank B. Brown, managing director, WRI, 1049 National Press Bldg., Washington 4, D. C.

November 27-30 American Association of State Highway Officials

Meeting, Traymore Hotel, Atlantic City, N. J. Kenneth Rice, secretary, AASHO, New Jersey State Highway Department, 1035 Parkway Ave., Trenton, N. J.

December 2-4 Associated General Contractors of America, New York State Chapter, Inc.

Thirty-first Annual Convention and Exhibition, Hotel Statler, Buffalo, N. Y. William M. Lees, managing director, AGNYSC, De Witt Clinton Hotel, Albany 7, N. Y.

December 6-7 Mississippi Valley Flood Control Association

Meeting, Hotel Roosevelt, New Orleans, La. Al Bourgeois, conventions and advertising manager, MVFCA, Hotel Roosevelt, New Orleans, La.

January 27-30, 1957 Associated Equipment Distributors

Thirty-eighth Annual Meeting, Conrad Hilton Hotel, Chicago, Ill. P. D. Hermann, executive secretary, AED, 30 E. Cedar St., Chicago, Ill.

January 28-31 Plant Maintenance and Engineering Show

Exhibit, Public Auditorium, Cleveland, Ohio. Clapp & Poliak, Inc., 341 Madison Ave., New York 17, N. Y.

January 28-February 2 American Road Builders' Association

Combined Conference and Road Show, International Amphitheatre, Chicago, Ill. Louis W. Prentiss, executive vice president, ARBA, World Center Bldg., Washington, D. C.

January 30-31 Midwest Welding Conference

Third Annual Conference, Chemistry Bldg., Illinois Institute of Technology, Chicago, Ill. Harry Schwartzbart, supervisor of welding research, MWC, Armour Research Foundation, Illinois Institute of Technology, 35 W. 33rd St., Chicago 16, Ill.

Stoody appoints agents for three districts

L. P. Fitzsimmons has joined the staff of the Stoody Co., Whittier, Calif., as a field representative and will cover the states of Virginia, North and South Carolina, Alabama, Georgia, and Florida. The western section of Canada will be handled by Andrew H. Gregg, who will work through the firm's distributors in the western provinces.

show the unit also used on highway and street work for loading dirt, gravel, tree roots, and debris. Features of the loader, as shown in a diagrammatic picture, are separate clutches, a turning radius of 9 feet, and a free-floating load boom.

To obtain Form No. DM 5608 write to Barber-Greene Co., 400 N. Highland Ave., Aurora, Ill., or use the Request Card at page 18. Circle No. 45.

Students view Seaway

Last month senior civil engineering students, under the direction of Dr. E. D'Appolonia of Carnegie Institute of Technology, had a week-long tour of the St. Lawrence Power and Seaway projects currently under construction.

Windrow loader

The Barber-Greene Model 500 windrow loader, with a snow-loading capacity of 6 cubic yards per minute, is described in a folder. Job photos



THE MOST MODERN ROLLER
ON THE JOB TODAY

HYDRAULIC BRAKES

Large automotive type hydraulic brakes on the four wheel drive differential. Quick, positive. Individual hand brake for parking.

4 SPEEDS FORWARD -- 4 REVERSE

Hydraulic reversing unit with torque converter clutch gives instant change of speed and reversal of direction by operating a single lever. Rolling speeds are 2, 4, 8 and 13 mph at 1800 rpm engine speed.

UNOBSTRUCTED BALLAST BODY

Body unobstructed by transmission and final drive. Built-in water tanks on each side of engine help equalize pressure on road.

Manufactured by

BACCO
BROWNING MANUFACTURING CO.

111 HUMBLE AVENUE SAN ANTONIO 6, TEXAS P. O. BOX 2707

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For more facts, use Reader-Reply Card opposite page 18 and circle No. 213



Frohring's new concrete mixer is available for mounting on, and operation through, a standard tractor.

Concrete mixer mounts on standard tractors

■ A new series of batch-type concrete mixers in capacities of from 3 to 5 cubic feet, for mounting on standard tractors or for conventional setups, is announced by the R. L. Frohring Machine Co. The tractor-mounted mixer is operated and transported entirely by tractor power as an integral implement.

The unit is mounted on the tractor's standard three-point hitch. The tractor's power takeoff rotates the mixing bowl. The entire mixer is raised and lowered by the tractor's hydraulic equipment. Either hydraulic or manual bowl-tilt models are offered.

For further information write to the R. L. Frohring Machine Co., Newbury, Ohio, or use the Request Card at page 18. Circle No. 98.

Wire-rope sheaves

■ Self-lubricating or plain bronze bushings are available with Sauerman Bros.' Durolite wire rope sheaves, according to a bulletin from the company. The sheaves, the bulletin states, are designed to withstand heavy loads and pressures on draglines and cableways. The specifications table points out that sheaves from 6 to 18 inches are made of heat-treated alloy steel, and those from 20 to 24 inches are of cast steel.

To obtain Bulletin No. 165 write to Sauerman Bros., Inc., 620 S. 28th St., Bellwood, Ill., or use the Request Card at page 18. Circle No. 86.

Maintenance towers

■ Safway Steel's Moto-Lift electro-hydraulic one-man maintenance towers are described in a bulletin from the company. Action shots point out that the tower is available in three models—manually operated, battery operated, and the 110-volt plug-in type. Cutaway shots show the tower rolling on casters with safety brakes, and raising its work platform from 7 to 17 feet. Construction details and specifications are included in the bulletin.

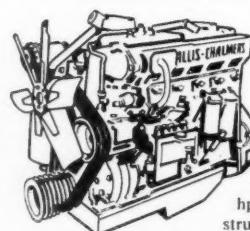
To obtain the bulletin write to Safway Steel Products, Inc., 6228 W. State St., Milwaukee 13, Wis., or use the Request Card at page 18. Circle No. 85.

DRYING SAND FOR USE IN THE CONSTRUCTION OF ONE OF THE BRIDGES along the Indiana Turnpike is this Tarco Flash-Flame aggregate and material dryer. The rig operates on either kerosene or L-P gas. According to the manufacturer, it can be put into operation in 10 minutes or less. Available with pneumatic tires, steel wheels, or for stationary installations, the rig features a welded, angle-iron frame. Power to rotate the drying drum is ordinarily supplied by a 4-cycle, air-cooled engine equipped with a high-tension magneto and reduction gears. However, dryers can be equipped with either a 110-220-volt, single-phase or 220-440-volt, 3-phase electric motor. For more information on the dryer write to the Tarrant Mfg. Co., 27-29 Jumel St., Saratoga Springs, N. Y., or use the Request Card at page 18. Circle No. 160.

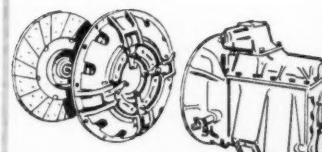


Look at the EXTRA WORK OUTPUT the Allis-Chalmers TS-360 Motor Scraper gives you

Here are some of the design features that put the TS-360 way out in front in steady performance, dependability and length of service life.



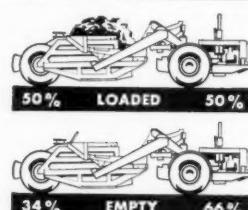
MORE USABLE HORSEPOWER. A heavy-duty Allis-Chalmers diesel engine delivers 280 hp to provide 18.66 hp to move each yard of struck dirt. This power gets the TS-360 away from the pusher fast... gives you speedier cycles, more trips per hour. In this engine, combustion timing and pressures are controlled for high efficiency. Air and fuel are mixed thoroughly for more complete burning. Follow-through combustion holds effective working pressures to take advantage of better crankshaft leverage.



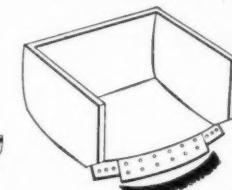
BIG-CAPACITY CLUTCH AND TRANSMISSION give fast, smooth operation under all job conditions. Clutch has air-actuated booster to reduce clutching effort and increase shifting efficiency. The heavy-duty transmission gives unmatched torque output in each gear range.



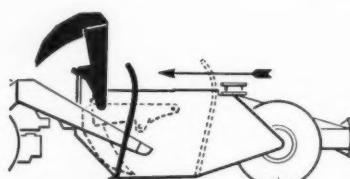
EXTRA-HEAVY FINAL DRIVES feature rugged differential assembly, carrier-housed drive shafts, final drive gears supported by large roller bearings and heat-treated drive axles. This long-life power train transmits maximum engine output for extra work volume, extra profit.



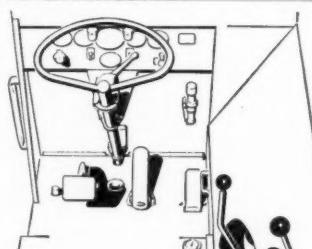
EXTRA TRACTION. The TS-360 motor scraper provides greater tractive effort, loading or traveling. Two-thirds of the empty weight is carried on drive wheels. Loaded weight is distributed equally between tractor and scraper wheels for better balance, increased flotation, safer hauling.



EASY-LOADING BOWL. Wide, low bowl design with curved bottom and offset cutting edge assures full capacity loads in less time. Curved bowl bottom "boils" dirt in, filling corners, heaping load with less spillage.



CONTROLLED DUMPING ACTION. Forward movement of ejector forces out load. High apron lift prevents material from jamming. This combination provides a continuous flow of material for a smooth, even spread.



POSITIVE STEERING. Two-stage selective power steering makes the operator's job easy... provides safe, feather-touch response and full maneuverability whether traveling at high speeds or in cut or fill.

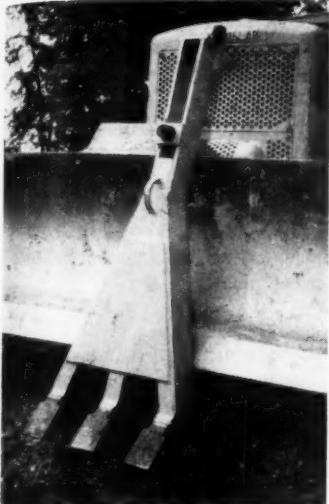


OPERATOR CONVENiences add to production, too. Easy-to-reach controls, full visibility, four-wheel air brakes, roomy platform, comfortable air-foam seat are some of the features that help operator get maximum output from the TS-360.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 221

CONTRACTORS AND ENGINEERS

Get all the
your Allis-
dealer—



The Ransome Model R100 stumper.

Three-prong stumper has renewable teeth

■ A new stumper that has replaceable manganese teeth has been introduced by The Ransome Corp. A three-prong unit, it can be attached to any bulldozer blade between 35 and 51 inches in height.

The Model R100 stumper features a positive clamping device which permits its being mounted or dismounted in a few minutes, the manufacturer reports. The stumper can be mounted without the need for any alteration of the bulldozer blade.

According to the manufacturer, the Model R100 brings about the concentration of the power of the tractor and the lifting force of the bulldozer

blade at the base of the stump, resulting in the stump's quick removal with a minimum of effort. The soil around the stump need not be disturbed.

For further information write to The Ransome Corp., 2729 Hunting Park Ave., Philadelphia 29, Pa., or use the Request Card at page 18. Circle No. 136.

Long aluminum scaffold has greater strength

■ Aluminum scaffolds in standard lengths up to 50 feet and with extra structural strength are announced by the Duo-Safety Ladder Corp. The AS2H scaffolds are available in greater lengths on special order.

The new scaffold is 2 feet wide and

comes with either a wood platform or a non-slip aluminum grip strut. According to the manufacturer, a 1,200-pound load concentrated in the center of a 40-foot span deflects the scaffold only 8 inches.

Among the reported features of the new scaffold are truss rods along the entire length, regularly spaced double rungs to eliminate buckling, triangle-shaped side plates for maximum strength, and rungs that are welded and internally expanded.

For further information write to the Duo-Safety Ladder Corp., 811 Ninth St., Oshkosh, Wis., or use the Request Card at page 18. Circle No. 117.

New dust binder lasts from 6 to 10 months

■ A dust palliative that lasts from six to ten months after the first application and a year or more after succeeding applications is announced by the Golden Bear Oil Co. Golden Bear dust binder is recommended for



access roads, highway median strips and shoulders, and as an aid in the compaction of subbases.

Golden Bear dust binder is diluted with water and sprayed on the area to be covered. It is a stable emulsion consisting of semi-liquid petroleum resins and a wetting solution. The resins are the film-forming, dust-binding portion of the preparation; the wetting solution serves as the carrying and penetrating agent and keeps the resins dispersed in finely divided particles.

For further information write to the Golden Bear Oil Co., 325 W. Eighth St., Los Angeles 14, Calif., or use the Request Card at page 18. Circle No. 177.

Surveyor's data book

■ Short articles on unusual surveying problems and their solutions are compiled in a booklet from W. & L. E. Gurley. Helpful hints are given on getting the most from a compass, eliminating errors in precise alignment, using the Polaris. Tips on the gradiometer are given. Data is also included on the use of balloons in surveys, methods for trying double azimuths, suggestions for overcoming unusual field hazards, and care of instruments.

To obtain Booklet No. 15M write to W. & L. E. Gurley, 518 Fulton St., Troy, N. Y., or use the Request Card at page 18. Circle No. 58.

More and more TS-360's are coming into your area every day. Ask your Allis-Chalmers construction machinery dealer where you can see them in action. Remember, too — your Allis-Chalmers dealer stocks True Original Parts and offers factory-approved service methods and factory-trained servicemen for your convenience.

ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS



For more facts, use Reader-Reply Card opposite page 18 and circle No. 214

Hints on maintenance

A fundamental necessity for machine operation is proper lubrication. The lubricant provides a slippery film between surfaces rubbing, turning, or scraping on each other. This film greatly reduces friction and the wasted power, wear, and heating that friction causes. Lubricant may also

serve as a cooling medium and as a barrier or cleaner to keep abrasive material from getting or remaining between moving parts.

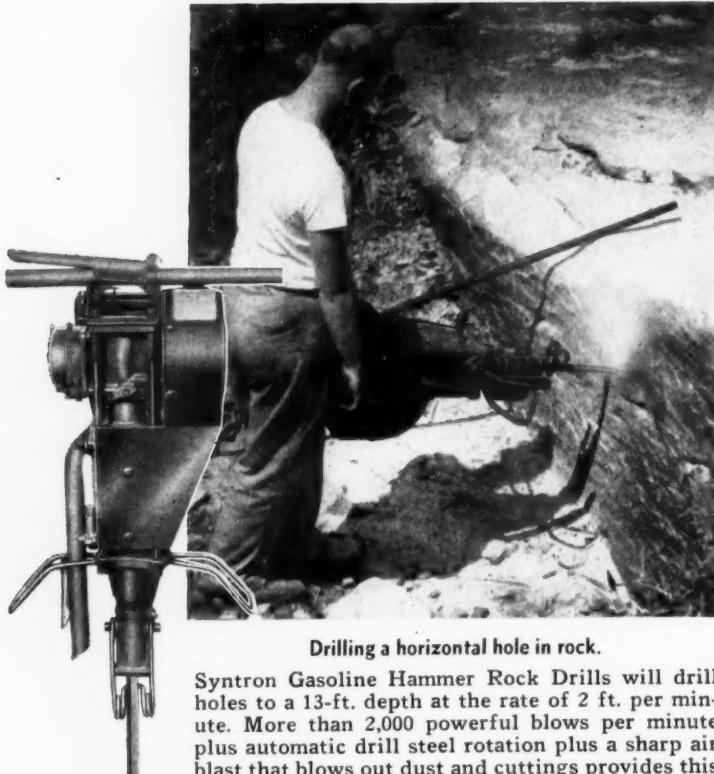
Lubricants are called oils or greases. Oils are fluid and vary from the extreme thinness of penetrating oil to the slow-flowing transmission oils,

The following article is an excerpt from the book, "Modern Techniques of Excavation", by Herbert L. Nichols, Jr., published this year by North Castle Books, Greenwich, Conn. Mr. Nichols is well known as the author of "Moving the Earth" and "How to Operate Excavation Equipment", excerpts from both of which have appeared in these pages. "Modern Techniques of Excavation", a shortened and revised version of "Moving the Earth", is priced at \$9.00.

Low Cost Rock Drilling with . . .

SYNTRON

Gasoline Hammer **ROCK DRILLS**



Drilling a horizontal hole in rock.

Syntron Gasoline Hammer Rock Drills will drill holes to a 13-ft. depth at the rate of 2 ft. per minute. More than 2,000 powerful blows per minute plus automatic drill steel rotation plus a sharp air blast that blows out dust and cuttings provides this low cost drilling. Syntron Gasoline Hammer Rock Drills are portable, 100% self-contained tools—no air compressor hose, battery or cable to hamper operation.

SYNTRON

Gasoline Hammer **PAVING BREAKER**

Rugged, economical, 100% self-contained unit. No air compressor is needed. Easily portable, one-man operation. 2,000 powerful blows per minute, governor-controlled. Reduce job-time on cutting, busting concrete, digging or tamping back fill.

WRITE FOR COMPLETE CATALOG — FREE



SYNTRON COMPANY

227 Lexington Ave.

Homer City, Pa.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 215

which are more often called greases. The term grease may be said to include these thick oils, but more specifically means the semisolid and solid mixtures of oil with special soaps or fillers which give the combination the qualities of body (flow resistance), adhesiveness, pressure endurance, water resistance, and melting point on the basis of which greases are selected.

Transmissions and other gear boxes usually are partly filled with oil or fluid grease. Some of the gears are partly immersed in this lubricant and carry it on their teeth to the higher gears with which they are meshed. Other gears, bearings, and splines are lubricated by splash, by gravity flow of oil, or both.

The dip method is best suited to heavy lubricants which cling to parts enough so that adequate quantities will be picked up and transferred to higher levels. Rotation should be slow and construction simple enough so that local hot spots will not result from uneven distribution of the lubricant.

When engines are lubricated in this manner the crankshaft usually has projections which dip into the oil and splash it around so that it reaches all surfaces requiring it.

An engine or a gear box may be lubricated partly by dip and splash, and partly by pumped oil.

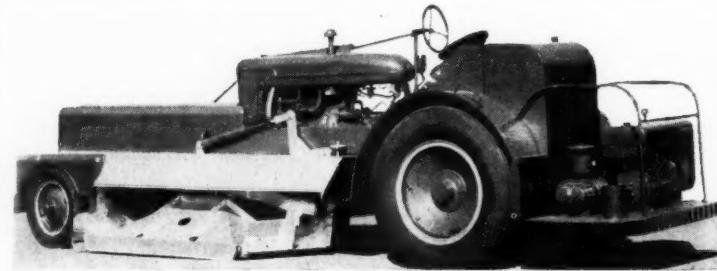
Many gear boxes have shaft seals made with Neoprene or other special

materials which may be attacked by chemicals found in some oils. The manufacturers will supply a list of safe oils that do not contain these chemicals, and use of any other brand may prove very costly.

Pump systems

A pump may pick up oil from a reservoir, usually the crankcase or oil pan under the engine, and force it through the crankshaft and camshaft in drilled passages which have openings in each bearing. The amount of oil which escapes at each point is regulated partly by the size of the outlet, but chiefly by the closeness of bearing fit. Connecting rods may also be drilled to carry oil to wrist pins. Parts not reached directly by pumped oil, such as cylinder walls, are lubricated by an oil mist generated by leakage out of the bearings, and by dipping and splashing as well. All oil returns to the reservoir to be picked up again by the pump.

A weakness of many of these systems is that the pump moves only a sufficient volume for normal requirements. If bearings wear or the oil becomes too thin, through error in selection or because of dilution or too much heat, an excessive amount of oil will escape at the bearings. This will lower the oil pressure and make it likely that the last bearings in the series will receive too little lubricant, with resultant damage. When the engine is idling, pressure may also be



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CONTRACTORS AND ENGINEERS

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inadequate to reach all bearings. Another disadvantage of low oil pressure is that it may materially reduce the volume and effectiveness of the oil mist.

These weaknesses should be avoided by using an oversize oil pump with a capacity in excess of any probable need. A pressure relief valve that will spill the excess back into the crankcase can then keep the oil pressure at a constant level in spite of thin lubricant, low speed, or loose bearings.

Oil should be checked every morning before the engine is started, and more frequently if it is found to be necessary. The operator should keep an eye on the oil-pressure gage, particularly when operating the machine at steep angles that might interfere with normal pump action.

Diesel engines tend to produce sludge and varnish-depositing compounds as by-products of combustion. Special heavy-duty oils have been developed that contain detergents that keep these substances in suspension, rather than making harmful deposits. It is absolutely necessary that these be used instead of ordinary motor oil.

Such oils can also be used to advantage in gasoline engines. On the first filling they may pick up so much accumulated sludge and varnish as to need to be changed very quickly, but this cleanout is very beneficial to the engine.

Some of the heavy-duty motor oils sold at premium prices are suitable for use in diesels, but the engine manufacturer should always be consulted before trying any brand.

Detergent oils are usually recommended for wet clutches with metal plates or plate lining, as varnish deposits interfere with their performance.

Dirty oil

It is difficult or impossible to keep foreign materials out of oil. Dirt can

enter an engine through outside contamination of oil in cans or funnels, by the oil dip stick that often is so located that it is very difficult to avoid touching it to dirty parts when checking oil level, through an inadequately protected or improperly serviced air intake and then past the piston rings, or through an improperly protected crankcase breather. (When an engine pulls, it tends to build up pressure in the crankcase; when it decelerates or holds back a load by compression a vacuum may develop which will suck air in. These effects are very slight in a new engine and increase with wear of piston rings and cylinders.) Carbon may work down from the combustion chamber and metal particles may appear from anywhere. A tractor or other machine whose engine pan gets in the dirt may take in some of it through holes in the oil pan or past a defective seal on the rear main bearing.

Pump systems may be protected by filters. There is usually a screen at the pump intake, but this is a comparatively coarse mesh which is useless against the finer particles that cause most of the extra wear. Of more importance are the line filters which contain replaceable elements of fiber, cloth, or paper, or permanent ones of closely spaced metal disks or porous stone.

The difficulty with most filter systems is that the filter is located in the return line from the shafts to the reservoir. Also, they are frequently so hooked in that they will filter only part of the oil flow.

As we have seen, all serious sources of dirt in engine oil put it in the crankcase first. A particle may be put through the system several times before it happens to get in the filter. If it escapes through a bearing it may re-circulate dozens of times, each time taking a little metal out of the

bearing, the shaft which rides in it, or both. Small particles, fine sand size and smaller, are likely to stay active much longer than coarse ones. If highly abrasive, like sharp silica particles, a fraction of a teaspoonful may cut a big engine to pieces before it is filtered out. More damage may be done in a few hours or even minutes than in years of normal operation.

The logical answer to this danger is to place the filter between the pump and the engine, and to make it of sufficient size to filter all the oil going into the engine passages. The pressure gage, if tapped into the line after the filter, will give warning of any clogging sufficient to reduce oil flow.

Dirt may get in a gear box through defective seals on shafts, from cans

or funnels, from dirt dropped in while removing filter plugs, metal grindings, and suction caused by temperature changes. Thick oil and leisurely turning of the parts allow most of this material to settle down into a sump that should be provided just above the drain plug, where it will be largely drained out while the oil is being changed. Some particles, however, will remain in circulation, damaging parts with every passage through them.

Since oil is changed in these units at long intervals, and breather plugs, if any, are small and easily serviced, the most serious contamination comes from metal filings. These are produced very slowly if the unit is in good condition, and more rapidly as

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OCTOBER, 1956

bearings wear and shafts and gears get out of line. A large quantity can be permanently taken out of circulation by using magnetic-drain and check-level plugs, which will hold them until removed for cleaning.

The only cure for dirt in a dip or splash system is to change the oil. This should be done when the unit has just been operating long and fast enough to warm the oil and pick up the dirt. It is a good plan to follow draining by putting in a thinner oil, running long enough to give it a chance to wash all parts, then draining that.

Grease

Pressure fittings must be greased at least as often as recommended by the manufacturer. Under unfavorable conditions, as when seals are defective, wear has created abnormally wide clearances, or there is unusual exposure to dirt or water, greasing should be more frequent.

Hinges which must work in the dirt, such as track pins and bushings, last longer if run dry than if lubricated.

In general, better lubrication is afforded by a little grease often than by a lot now and then. It is more effective at preventing the bearing or joint from running dry at any time, and at preventing entrance of dirt.

After dirt has worked into a solid bearing (bushing), it can often be pushed out by heavy greasing. Cleaning is most complete if the unit can be rotated while grease is forced in. Even if it is not possible to get all the dirt, it is seldom desirable to disassemble it for cleaning, as the value of the parts and the amount of damage from the dirt is not likely to justify the labor cost and lost time.

If there is no seal, and both the shaft and the bushing are hard steel, plugged passages can be opened and dirt and old grease forced out by removing the fitting and exploding a blasting cap deep in the grease passage.

Ball and roller bearings are very vulnerable to damage by dirt. They are usually protected by seals. If dirt gets in one, the machine should be stopped and the bearings taken out and cleaned, as otherwise it will be destroyed very quickly.

The type and quality of grease is important. Slow-moving solid bearings or bushings operating under light load will function well with almost any grease, but best results and longest intervals between greasings are obtained by using a type thick and sticky enough to stay where it is needed. High speeds require heat and pressure resistance to enable a thin film of lubricant to persist at spots or lines of extreme pressure, to avoid channeling or gouging it away from the places where it is most needed. The wiping action of worm and hypoid gears will clean ordinary lubricants off the tooth surfaces.

If the location is hot, a grease which does not soften and run out at high temperatures is required. If there is exposure to water, water-resistant grease having the other necessary qualities should be used.

Incidentally, the thick waxy grease

used in older type water pumps is a service man's best friend for keeping bolts and nuts free of corrosion. It keeps threads oily and easy to turn for long periods if put on the threads before a correction is made, and smeared on the outside afterward.

If greasing is done too generously or too often, so that more lubricant is supplied to a bearing than it can use, damage of various types may be caused. If the seals are of a type that will not permit the passage of grease, the tremendous pressure built up by either hand or air guns may destroy the seal, or deform or burst the casting.

If the grease escapes readily, it will build up around the casing, and if in large quantities, will run down onto other parts of the machinery or to the ground. It will combine with dirt and trash to make a nasty mess, and may ruin clutch and brake linings.

The majority of hand grease guns now in production are the lever type. The cylindrical barrel has a smooth inside finish. The metal piston with leather seals is pushed toward the head by a light spring. The follower rod is used to pull the piston back against the spring when refilling by suction. The collar groove in the rod permits locking it in the back.

The head contains a fitting through which grease can be pumped into the reservoir, and a passageway from the reservoir into the nozzle tube. A piston actuated by the hand lever moves up and down in this passage, in which a ball check is located.

When the piston is pulled up, grease or air in the tube is prevented from following it by the check. This leaves a vacuum so that when the passage to the reservoir is opened, grease is sucked into the passage. The grease is urged in by the pressure of the follower spring, and by atmospheric air entering the barrel around the follower rod in the back cap.

From New Orleans to Ketchikan "Small" CAT* Diesel Tractors Lick "Big" Jobs

Caterpillar D4 and D2 Tractors, for their size and weight, are as rugged machines as ever wore yellow paint. There are hundreds of jobs they can do just as efficiently as their bigger brothers. And contractors are proving it.

The four tractors shown here are working in localities as far apart as Alaska and Louisiana, and none of them is on an easy job. One owner, John Hannigan, of Philadelphia, puts it this way: "They're tough. I'd never buy anything else. They'll outwork other makes any time and any where. The only repairs I've made on this D4 in three years were adjustments to the main clutch, tracks and steering brakes."

Both the D2 and the D4 are built to handle the tough jobs, right up to their capacity, all day long and month after month. Yet they're small and compact enough to work in cramped quarters—tunnels or narrow city streets. Both are economical to operate, and

maintenance costs are consistently low, because the quality built to stand up under punishment. Their dependable Caterpillar Engines have flywheel capacities of 48 HP for the D2 and 63 HP for the D4.

Let your Caterpillar Dealer show you how one of these smaller Cat Diesel Tractors will fit into your construction work and save you money. He backs his long work life with reliable service and Caterpillar parts you can trust.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

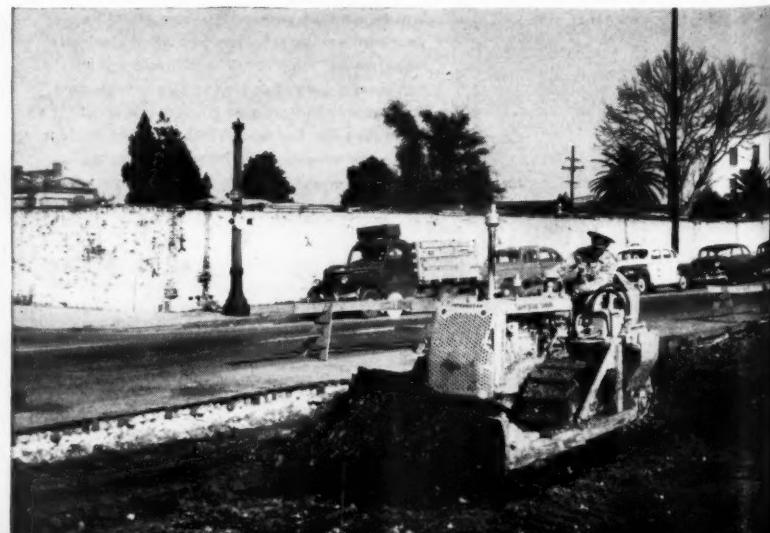
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NEW ORLEANS

Taking the "blues" out of Basin Street, this Cat D2 Tractor, owned by Boh Brothers Construction Co., New Orleans, La., is helping widen the famous thoroughfare to 44 ft. on each side of a center parkway. Old St. Louis Cemetery shown in background.



When the piston is moved down, it blocks the reservoir passage, then forces the grease down and compresses the check spring so that the grease can flow past the ball into the tube. When the piston is raised, the ball reseats itself and the passage refills from the reservoir.

The small piston and the comparatively long lever enable this gun to develop pressure up to 10,000 psi. Most nozzles and fittings are designed to take 20,000 pounds pressure. However, the seals and casings of the parts being lubricated will often bend or break at less pressure, so caution must be used when forcing grease into

them.

The gun may be filled in three ways. The easiest is to pump grease into it through the fitting in the head casing from a loader pump. Precautions should be taken against pumping in air with the grease.

If there is no loader fitting, or no loader pump is available, the head casting is unscrewed, the head of the barrel cleaned and pushed well down in the grease supply, and the follower arm drawn back slowly. If the grease is thin enough to flow, it will be sucked into the barrel. It may be necessary to move the gun around in the container to prevent air from enter-

ing. When the follower is fully back, it is locked with a sideward motion, the head screwed on, and the follower released. It is good practice to keep the grease in a warm place to keep it soft enough to flow.

If the grease cannot be pumped or sucked into the gun, it may be put in with a small paddle and air kneaded out of it. It is difficult to avoid air pockets with this method.

Air in the grease may form a pocket in the passageways that will prevent the gun from working. The block may be temporary until the air is worked out, or permanent if the gun is worn enough to allow it to return beside the

piston into the reservoir.

Air takes much longer to get through the head than the same bulk of grease. However, many times a gun is said to be air locked when the trouble is partly or wholly foreign matter which prevents the ball check from seating properly. This allows grease or air to be sucked into the cylinder from the outlet tube on the up stroke, and pushed back into it on the down stroke.

In either case the cure is to disassemble the unit, clean it, and pack it with fresh grease.

The outlet tube consists of a piece of $\frac{1}{8}$ -inch pipe, or of equivalent-size flexible hose. Pipe thread is used. Any of the standard couplings can be attached to this.

Thick grease may not feed properly in this type of gun, as combined atmospheric and spring pressure may not be enough to make it flow. It may be persuaded to work by tapping it or by heating it. Best results may be obtained if the follower piston is so built that the rod can be locked to it, so that pressure can be applied while pumping.

A small dab of grease is usually left on the hydraulic fitting as the gun is pulled off. This should not be wiped off until the fitting is to be greased again, as it protects the grease passage against dirt that would otherwise lodge in it.

Button head fittings can be wiped clean, as they have no dirt-catching openings.

Asphalt-base lubricants

Exposed gears on revolving shovels, various other types of open gearing, and sometimes wire ropes may be lubricated with an asphalt derivative, known under various trade names and recognizable by its tar-like appearance.

In its natural state it is too hard at ordinary temperatures for use in any type of grease guns or dispenser. It is applied by heating, then pouring it in a thin stream on revolving gears or painting it on stationary ones with a brush.

The most convenient way to handle it is to heat the original container, usually a 35-pound pail, and pour it into a number of small cans. One can is kept ready for use by hanging it or resting it on the exhaust pipe or manifold.

At least one brand is supplied mixed with a volatile solvent, so that it can be applied without heating, and hardens on the gears as its carrier evaporates.

Small amounts of either type should be used often, as most of a heavy application runs or works off in a few minutes. The surplus builds up hard deposits underneath that may interfere with the gear or with other machinery below. Such accumulations are very difficult to remove, particularly when combined with dirt.

Asphalt-base lubricants cannot be removed from skin or clothing by ordinary cleansers. However, they are readily softened by lubricating oil and can then be removed by wiping or washing.

(To be continued next month)

TORONTO

Pace Construction Co., of Toronto, Ont., owns this D4 with No. 4A Bulldozer, shown 'dozing fill into a bend of the Humber River. This is a diversion job, digging new channel to prevent flooding, and moving the earth into the old river bed.



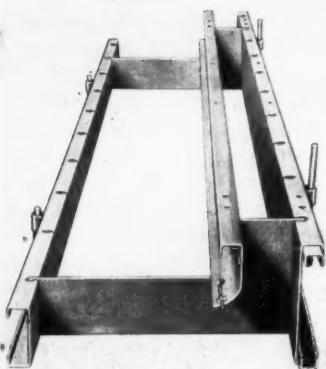
KETCHIKAN

The D2 helped Manson-Osberg Co. in the construction of a 7 ft. x 8 ft. hydroelectric tunnel through granite rock near Ketchikan, Alaska. Equipped with scrubbers, the tractor worked the whole length of the 4000-ft. tunnel, moving out over 1000 cu. yd. of rock.



PHILADELPHIA

The D4, owned by contractor John Hannigan, is up old concrete foundations and rough grades for a new driveway and parking lot at one of the Penn Vit Co. supermarkets, in Philadelphia, Pa.



General Road Machines' combination curb and gutter forms, showing dowel and sleeve joint connections.

Curb and gutter forms set, dismantled easily

■ A line of combination curb and gutter forms, said to allow fast setting and easy removal, is announced by General Road Machines, Inc. Supplied in 10-foot sections, the new forms are made of electro-welded 10-gage special-alloy steel. The back curb and front gutter forms are slotted every 12 inches for division plates.

The forms have close-fitting sleeve joint connections, said to provide quick, easy alignment. The face curb forms have sliding dowel connections, and slots are provided for locking lugs on the division plates. Tapered wedges in the locking lugs hold the face curb forms in place. Faster re-use of the face curb forms is possible because the forms are separately detachable, the manufacturer reports.

Each 10-foot section has single-wedge stake pockets on the front gutter form and single or double-wedge stake pockets on the back curb form, depending on the form height. Stakes, of $\frac{1}{8}$ -inch-diameter re-rolled rail material with hot-forged points, are available in 18, 24, 30, and 36-inch lengths. Other lengths are available on special order.

For further information write to General Road Machines, Inc., Niles, Ohio, or use the Request Card at page 18. Circle No. 14.

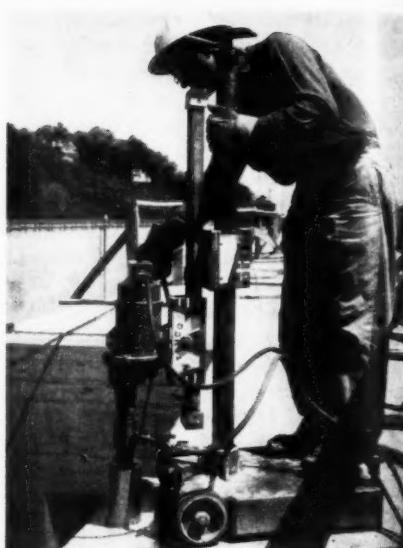
India ink ball point pen

■ A ball point pen that writes with India ink is announced by Samuel Taubman & Co. The pen will write for reproduction on all types of technical Diazo sensitized facsimile papers and on direct image offset paper plates, according to the manufacturer, and will reproduce immediately—without photographs—on any offset litho press.

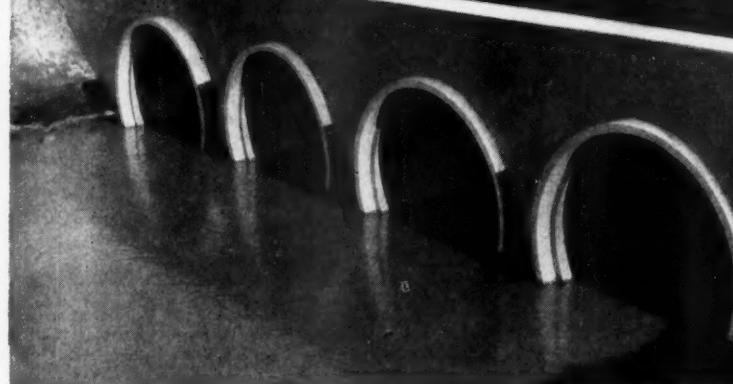
The Black India ink pen is recommended for use by architects, engineers and draftsmen. The ink dries instantly, will not smear, and is indelible and waterproof. It can be used on papers made for any dry or moist developing and duplicating machine.

For further information write to Samuel Taubman & Co., 176 Madison Ave., New York 16, N. Y., or use the Request Card at page 18. Circle No. 154.

THE PROBLEM OF CUTTING HOLES for handrail posts along the edge of the new Lock No. 19 on the Mississippi River at Keokuk, Iowa, without chipping or cracking the concrete was solved by the J. S. Jones Construction Co. with the aid of a Truco portable diamond drilling machine. The Charlotte, N. C. firm had to spot 800 holes, 4 inches in diameter and $9\frac{1}{2}$ inches deep, within 6 inches of the edge of the lock wall. A jackhammer alone, it was realized, would cause the chipping and cracking that was to be avoided. The contractor used the diamond drill to cut the initial $1\frac{1}{2}$ inches of a hole, as shown here. Then a steel sleeve was inserted and the remainder was completed with a pneumatic hammer. The Truco diamond bit completed the initial cuts on 500 holes—a total of $62\frac{1}{2}$ feet—before it had to be reset. For more information on Truco drills and bits circle No. 143 on the Request Card at page 18 or write to the Wheel Trueing Tool Co., 3246 W. Davison Ave., Detroit, Mich.



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ROUND PIPE

As the nation's largest maker of concrete culvert and drainage pipe, American-Marietta offers contractors round pipe of known permanence and performance. A full range of sizes is available, with pre-tested strengths to meet various specifications. For extreme loads see Hi-Hed Pipe, below.



HI-HED PIPE

Elliptical Hi-Hed Reinforced Concrete Pipe permits greater self-cleansing velocities in dry weather periods. Also perfect for drainage structures under unlimited fills because Hi-Hed has 50% greater strength than its round pipe equivalent.



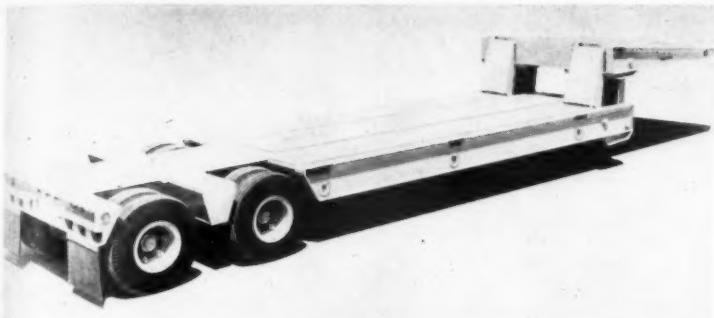
FLAT BASE PIPE

Save as much as 30% in the construction of pedestrian underpasses, culverts and cattle passes with pre-cast Flat-Base Pipe. Can be jacked under highways without disturbing traffic.



CONCRETE CRIBBING

Used as a retaining wall, both open-faced and closed-face "King-Size" Cribbing offer flexible construction unaffected by movements that crack monolithic walls.



Folding gooseneck rig features level deck

Front and rear-loading folding gooseneck trailers with level decks have been included as standard models in the Martin heavy-duty trailer line. Designated as the RFTL series,

the trailers are available in four models with capacities of 20, 27, 32, and 40 tons.

The level deck feature permits more usable platform area, shorter

The Martin gooseneck trailer with the gooseneck in towing position and the deck level.

over-all length, and weight reduction of approximately 800 pounds as compared to drop-deck models, the manufacturer reports.

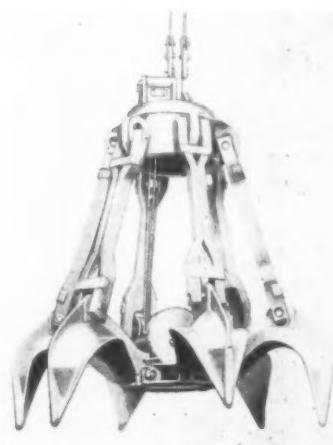
With the folding gooseneck lowered, equipment is driven directly onto the platform without the use of ramps or blocking. The winch-equipped truck-tractor lifts the folding gooseneck into towing position. According to the company, one man can handle the entire operation in 5 minutes.

For further information write to the Martin Machine Co., Kewanee, Ill., or use the Request Card at page 18. Circle No. 17.

Up to 8 independent tines featured on new grapple

A new grapple, with five, six, or eight tines, depending on its size, is announced by Ruhr Industries. The Model M-1 grapple is able to develop a grip of up to 50 tons. Each tine is independent of the others and is positively activated, the company reports.

Features of the M-1 include vertical slideways with barrel-type bush-



ings for maximum vertical and angular tine movement; one-piece top head with spun, flanged, and dished head for rigidity and strength; welded, rigid arms for resistance to impact; and rocking sheave blocks at both the top and bottom of the grapple for bigger loads at any digging angle.

The M-1 is available in sizes from .33 to 3.3 cubic yards. Wear plates of manganese steel are available for the larger models.

For further information write to Ruhr Industries, 1411 Walnut St., Philadelphia 2, Pa., or use the Request Card at page 18. Circle No. 17.

Excavator carriers

All the carriers available for the Gradall excavator are presented in a catalog from the Gradall Division of the Warner & Swasey Co. These carrier models include crawlers, self-propelled wagons, and heavy-duty carriers. Specifications, outstanding features, and the construction details on the machine's upperstructure are included in the catalog.

To obtain Form No. 5607 write to the Gradall Division, Warner & Swasey Co., 5701 Carnegie Ave., Cleveland 3, Ohio, or use the Request Card at page 18. Circle No. 57.

Off-highway trucks

Various models of heavy construction trucks and truck tractors for off-highway work are pictured in a folder from the Autocar Division of White Motor Co. Job photos show the trucks used for hauling rock, cement, concrete, and trailer-mounted heavy construction machinery. Brief details accompany the photos.

To obtain the folder write to the Autocar Division, The White Motor Co., Exton, Pa., or use the Request Card at page 18. Circle No. 41.

AMERICAN-MARIETTA PLANTS READY TO SUPPLY BILLION DOLLAR HIGHWAY PROGRAM



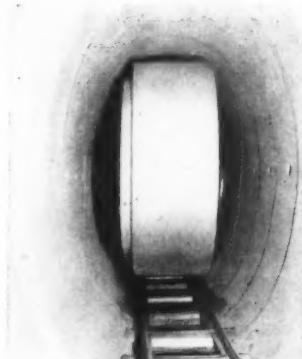
AMDEK BRIDGE SUPERSTRUCTURES

Prestressing, pretensioning and vacuum processing—plus the use of special voids—results in a stronger, lighter bridge member that can be handled like steel beams in any weather. Pre-cast Amdek sections, above, were positioned in just six hours. Amdek eliminates painting and maintenance.



LO-HED PIPE

Elliptical Lo-Hed Pipe carries a greater flow than its round equivalent—in a minimum depth of cut with increased depth of cover. Easier to lay, to grade and line. Pre-tested strengths to answer any low headroom problem.



INNER CIRCLES

Tunneliner Process allows passing of pipe through pipe underground without requiring excavations or disruption of surface traffic. Work progresses regardless of weather conditions.

Our technical staff will be pleased to assist you with your problems.



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Tellyer Concrete Pipe Co.	American-Marietta Company of Pennsylvania	

For more facts, use Reader-Reply Card opposite page 18 and circle No. 220

Photogrammetry, research groups formed by ARBA

Stepped up services for members of the American Road Builders' Association is the reason behind the association's establishment of a technical committee on photogrammetry and the consolidation of technical activities in a new Engineering and Research Division.

The technical committee will serve as a clearing house for information in a field that is assuming growing importance in highway construction. Heading the committee is William C. Cude, Chief of the Army Topographic Engineering Department of the Engineer Research and Development Laboratories, Fort Belvoir, Va., and national president of the American Society of Photogrammetry. Among



William C. Cude, chairman of ARBA's technical committee on photogrammetry.

committee duties will be the preparation of reports on work done with photogrammetry and the latest developments in equipment needed for such work.

Stephen H. Meem, a civil engineering graduate of Virginia Military Institute who has worked on hydroelectric dams, industrial buildings, and other projects, is managing director of the new Engineering and Research Division of ARBA. He will take charge of publication of ARBA technical bulletins and special reports that aim at promoting the use of improved materials and the newest engineering techniques in the design and construction of roads.

Motor scraper

The design, construction, engineering, and operating features of the Allis-Chalmers TS-260 motor scraper are contained in a catalog. Job photos point out that the scraper has a struck capacity of 11 cubic yards, and a heaped capacity of 14 cubic yards. The specifications chart rates the engine at 200 horsepower at 2,000 rpm, and lists 90-degree steering for work in restricted areas. There are cutaway shots and brief details on the component parts of the scraper.

To obtain Catalog MS-1105 write to the Allis-Chalmers Mfg. Co., Milwaukee 1, Wis., or use the Request Card at page 18. Circle No. 42.

Clipper Mfg. names

Clipper Mfg. Co., Kansas City, Mo., manufacturers of the ConSawMatic have appointed Warren Olsen and Roy Haile field representatives. Olsen will cover southeastern New York, and the states of Rhode Island and Connecticut from the Hartford, Conn., office.

Southwest Texas will be handled by Roy Haile from the Austin office.



Stephen H. Meem, left, managing director of ARBA's new Engineering and Research Division, talks over his duties with Maj. Gen. Louis W. Prentiss, (USA-ret.), executive vice president, seated, and Burton F. Miller, deputy to Gen. Prentiss.

Modification increases speed of sinker drill

A faster, stronger rotation, resulting in increased drilling speeds and hole footage, has been achieved in the Le Roi-Cleveland H-10 sinker drill, according to the manufacturer.

By increasing the metering limits of the valve and the valve block, faster drilling speeds are possible in both hard and soft formations due to the extremely short travel of the valves. The new valve and valve block are interchangeable with those previously used in the H-10 sinker drill.

For further information write to the Le Roi Division, Westinghouse Air Brake Co., 3716 W. Wisconsin Ave., Milwaukee, Wis., or use the Request Card at page 18. Circle No. 133.

GREAT NEW IDEA in tractors

52 hp

WORK BULL Model 404 with $\frac{5}{8}$ -yd. low-pivoted loader. Like all WORK BULLS, 404 has specially designed industrial front axle and heavy-duty clutch. (Diesel engine is optional.)



42 hp

WORK BULL Model 303 with angle dozer and backhoe. Gasoline engine, standard, offers high torque at low speed for better digging. (Diesel optional.)



34 hp

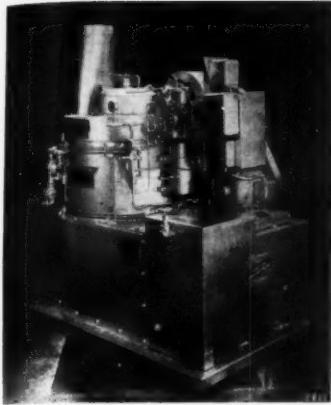
WORK BULL Model 202 with hydraulic-controlled hoe. Most of the WORK BULL attachments can be switched in 5 to 15 minutes in the field — without special gear.



42 hp

Davis PIT BULL with $\frac{7}{8}$ yd. loader features torque converter, reversing clutches and 5 speeds forward, 5 reverse. In many cases it outperforms high-priced, single-purpose rigs.

FORK
LIFT



Generator produces steam in two minutes

■ A unit that will produce steam in two minutes from a cold start is available from Littleford Bros., Inc. The Kwik-Steam generator is recommended for use in keeping ready-mix concrete plants in operation during the winter months.

Automatically controlled, the Kwik-Steam burner cycles on and off when steam is required. The unit maintains a predetermined steam pressure at all times. It burns fuel oil and is said to operate without giving off any smoke. It is available with an electric motor, a gasoline engine, or an electric motor with electric-eye safety control.

For operating ready-mix plants, the manufacturer recommends that

the steam be injected into the water tank and controlled by a thermostatically regulated steam valve. To heat aggregate, the steam should be introduced into the aggregate compartment near the bottom of the bin. The steam also can be used for thawing gates in aggregate cars during cold weather.

With the Kwik-Steam generator, the manufacturer reports, 60-degree concrete can be delivered safely in the coldest weather.

For further information about the generators write to Littleford Bros., Inc., 485 E. Pearl St., Cincinnati 2, Ohio, or use the Request Card that is bound in at page 18 of this issue. Circle No. 167.



New power saw high on safety features

■ The new Wright power saw is recommended for such construction work as cutting pile supports, sheathing, trimming, bucking, undercutting, precision cutting, and other heavy-duty operations. The reciprocating blade of this gasoline-powered saw works like a handsaw and has a safety blade guard which protects the operator as it guides the blade.

The saw is said to start and cut smoothly without grabbing or kicking. It operates at a speed of 173 strokes per second and will cut from any position. The blade can be changed in 30 seconds and sharpened in less than 10 minutes, on the job, the manufacturer reports.

Other features include a safety cut-off switch with one-finger control and an automatic rewind starter.

For further information write to the Wright Power Saw Division, Thomas Industries, Inc., 1419 Illinois Ave., Sheboygan, Wis., or use the Request Card at page 18. Circle No. 171.

M-H-F

WORK BULLS

NOW — from one source — a package of 5 versatile, low-cost tractors with 20 power-matched, easily-interchangeable attachments!

Contractors! Industries! Utilities! Profit from this new idea in greater machine utility and efficiency. Get the benefits of low cost attachment interchangeability . . . the high-profit performance of tools matched to power and speed . . . the adaptability of job-matched equipment to replace or supplement high-priced, single-purpose units.

What's more, you enjoy the advantages of a single sales and service source — a complete package — available only in the low-cost WORK BULL line.

New, and built to excel where other wheel tractors fail, WORK BULLS pay off in a wide variety of applications . . .

As primary equipment, WORK BULLS put former hand work on a power basis . . . efficiently handle scattered, work-and-run assignments.

As backup machines, WORK BULLS team with medium-priced, single-purpose equipment . . . give you the power equipment ratio that exactly fits the job.

As utility or cleanup tools, WORK BULLS are perfect for hustling around big layouts and relieving big equipment of unprofitable odd-job duties.

Get the complete WORK BULL story now. Write for 24-page illustrated catalog.

IMPORTANT NOTE TO RETAIL DISTRIBUTORS — WORK BULL franchises are still available in a few key areas. Write or wire for details.

Look at this wide choice of integrated WORK BULL attachments!

LOADERS — 9 or 11 cu. ft.; $\frac{1}{2}$ -yd. or $\frac{1}{3}$ -yd.

BACKHOES — 12, 16, 20, 24 or 36" buckets

MOWERS — Reel, rotary or side-mounted

FORK LIFTS — 2000 and 4000 lb. capacities

BLADES — Bull dozer, angle dozer or grader

BROOM OR SWEEPERS

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M-H-F WORK BULLS

Division of Massey-Harris-Ferguson, Inc.

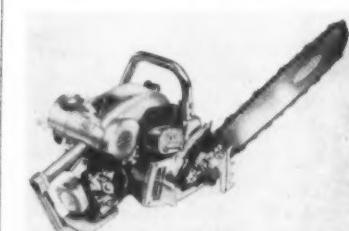
12-1 Quality Avenue

Racine, Wisconsin

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 221



FORK LIFT
Fork Lift Model 202 has lifting capacity of 1500 lbs at full height, 4000 lbs at half height. Optional mast gives lift heights to 21 ft. Works on or off hard surface.



The Lombard Model 46 saw.

special adjustment. It is available in 16, 20, and 24-inch sizes, and in the bow type, as are the other models.

Model 44 has a float-type carburetor and will cut in most any position except up and down. The Advanced DD direct drive saw comes with either a float or a diaphragm carburetor. It includes an automatic, adjustable oiling system. The 4D cuts in any position and has a spade-grip handle.

For further information on these saws write to the Lombard Governor Corp., Ashland, Mass., or use the Request Card at page 18. Circle No. 138.

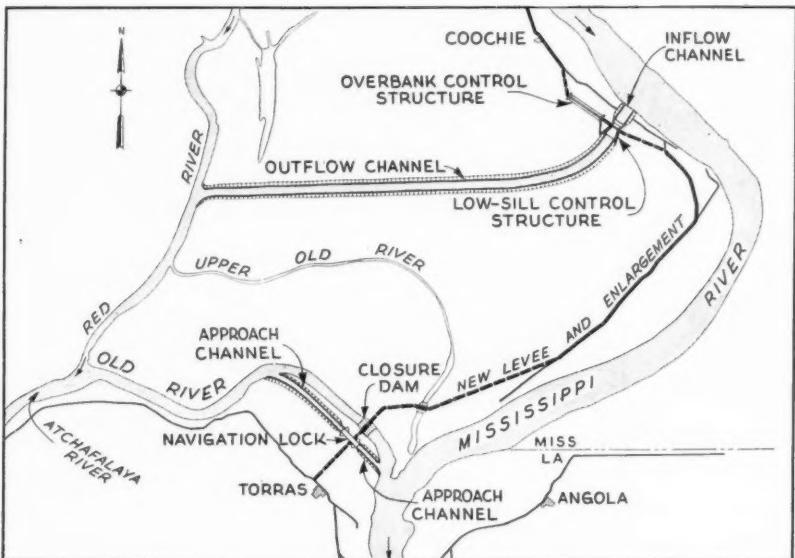


View taken looking south along the centerline of the low-sill structure. The cameraman is standing atop the northern preload fill for the low-sill structure, and the southern preload fill may be seen in the background.



A dragline with a 2½-yard bucket loads 13-ton Euclids in the excavation area. Four draglines and 20 Euclids are being used on the job.

Excavation, clearing prepare for Old River control project



Good management, early placement of orders for materials, and excellent weather have combined to put work well ahead on the low-sill structure for the Old River control project on the Mississippi between Baton Rouge, La., and Natchez, Miss. In the fiscal year since work started on the project,

26 per cent of this construction has been completed; originally, it was to have been 17 per cent completed at this time.

Right now, about a year after the start of work on the low-sill structure, clearing for the outflow channel is moving along at a good rate; excav-

ation for the foundation of the structure is nearing completion, and the driving of foundation piles for the low-sill facility is under way. Concrete placement is expected to begin in about two months, and, with reasonably good weather, construction should move swiftly enough so that

Excavation for the low-sill structure, looking west. The Mississippi River is directly below the photographic plane. Construction materials are stockpiled in the foreground. The outflow channel will be located directly behind the cofferdam in the background and will extend about seven miles to Red River.



Settlement, drainage, and dewatering problems are in the past; first year of work puts Mississippi River job ahead of schedule

The plan of improvement being built to prevent diversion of the Mississippi through the Old and Atchafalaya Rivers. The plan calls for two concrete control structures, the first of which is now under construction, levee enlargement, a navigation lock, inflow and outflow channels for the structure being built, and closure of Old River with an earth dam.

by MAJ. GEN. JOHN R. HARDIN, U. S. Army
President, Mississippi River Commission
U. S. Army Corps of Engineers

the low-sill control structure can be completed by January, 1959.

Overall program

This structure is one of several being built under the project, which is designed to keep the Mississippi flowing in its present course to the Gulf of Mexico. (See "Old Man River Will Roll Along with Help from Corps of Engineers," C&E October, 1955, pg. 100.) In this area, the Mississippi, Red, Atchafalaya, and Old rivers are linked so that they form the letter H. The Red River ends and the Atchafalaya River begins at Old River, the cross bar of the H, which runs eastward to join the Mississippi.

In recent years, water from the Mississippi has been flowing into Old River, then down the Atchafalaya to the Gulf. Studies made by the Mississippi River Commission, Corps of Engineers, showed that this tendency would increase and that probable diversion of Mississippi waters would occur about 1975. This is not unusual: the Mississippi has changed its course several times over the centuries. But for today's complex economy, such a change could mean disaster. Diversion would leave New Orleans without fresh water for domestic and commercial consumption, impair river navigation, and require bridges, pipelines, and even towns to be rebuilt.

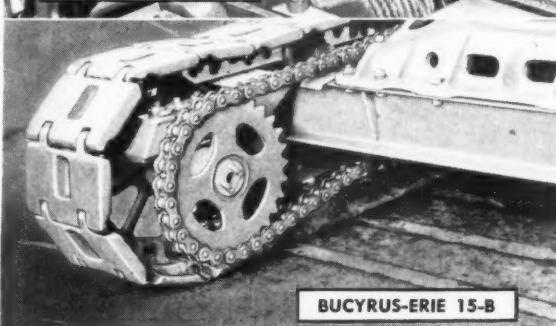
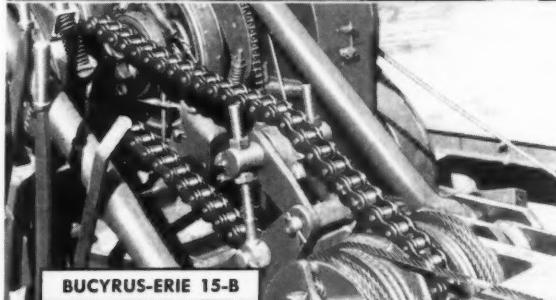
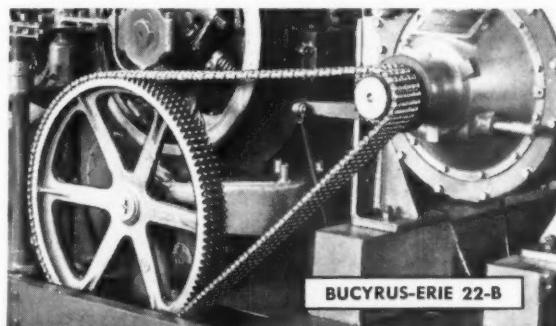
The over-all project, authorized in the Flood Control Act of September 3, 1954, calls for two reinforced-concrete structures on the west bank of the Mississippi River about ten miles upstream from Old River, a navigation lock connecting the Mississippi River and Old River, an earth-fill dam in Old River, approach channels for the lock, inlet and outlet channels for the low-sill structure, and enlargement and extension of the main line Mississippi River levee in the area. All but construction of the navigation lock will be built at an estimated cost of \$47 million to the federal government.

F & C Engineering Co., Houston, Texas, holds the \$9,892,628 prime contract for the low-sill structure, which will pass normal and low flows from the Mississippi and, in time of flood, assist the overbank structure in passing flood flows into the head of the Atchafalaya Basin. These structures, operating together, will discharge water at approximately 700,000 cfs.

Well before construction started, foundation investigations were made which showed that it was necessary to eliminate the settlement that was expected to occur after work began. The foundation soils at the abutments of both the low-sill and the overbank structures will be subject to settlement beneath the adjoining levee fills, and any appreciable settlement will result in a downward drag on the foundation piles. The movement could greatly overload the piles beneath the abutment piers. Also, settlement at the abutments will tend to cause the earth fill to pull away from the curtain walls, and this might result in cracks and voids opening up in the soil and creating a hazardous seepage condition during high water.

To overcome these difficulties, pre-

Seven permanent relief wells are in the stilling basin of the structure. These wells will have riser pipes projecting vertically through the upstream baffle blocks to permit pumping during construction. The preload fill for the south end of the low-sill structure is visible in the background.



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Clearing for the outflow channel is well under way. Looking north, this shows the cleared area, begun at Red River, at the left.

load fills were constructed at the ends of the low-sill and overbank structures to reduce settlement before work got under way. Settlements were expected to be between 10 and 17 inches, and the preload fills were overbuilt so that this settlement would occur in a period of about twelve months. A substantial portion of each fill will remain in place as part of the permanent embankment connecting the structures with the Mississippi River levees and with each other.

Drainage and dewatering

The problem of keeping the excavation dry and holding down the hydrostatic head—which could rise as much as 70 feet—became a major concern before excavation started. A test ex-

cavation, made in the proposed inflow channel for pile-loading tests, was flooded out several times during the tests, giving striking testimony that adequate drainage of the excavation was vital during construction.

To prevent surface water from entering the excavation area, a perimeter dike was first constructed around the excavation. Two large drainage interception ditches were also cut on each slope of the excavation so that water could drain into two sumps and be pumped out over the perimeter dikes and the cofferdams. These collection ditches serve a double purpose. First, they prevent too fast a runoff of water from falling on the slopes; and secondly, they store water so that it can be pumped at an even rate and eliminate the need for excessively large sumps. A wellpoint system, also installed on the slope, maintains slope drainage and prevents ground water from seeping into the side of the excavation.

Some 27 deep relief wells have been installed in the excavation area also, to prevent hydrostatic pressures from causing difficulties during the earthwork. The seven permanent-type wells in the stilling basin area, spaced on about 90-foot centers, penetrate the major portion of the deep sands. The wells consist of 8-inch-ID slotted wooden well screens, with a nominal length of 32 feet and with 8-inch wooden riser pipes. The screen sections extend from about -80 to -112. The riser pipes from these wells will project vertically through the upstream baffle blocks so that pumping can be continued during construction.

Installation of the dewatering system, relief wells, and piezometers was done under a subcontract by the Independent Wellpoint Corp., Monroe, La.

Structure excavation

Excavation for the low-sill facility is now nearing completion under a subcontract held by Joe E. Freund, Monroe, La. The excavation, 1,500 feet long and from 600 to 1,000 feet wide, varies from -5.0 in the approach channel to -20.0 feet in the central portion of the stilling basin. The natural ground elevation at the structure location is approximately 50 feet above mean sea level. Side slopes are generally 4 to 1. The job of moving about 2,913,000 yards of silt, sandy silt, and silty sand from this area is being handled by four draglines, each with a 2½-yard bucket, and twenty Euclid 13-yard bottom dumps.

Excavated material is being used to build tie-in embankments from the structure to the levee, and these embankments are being compacted by the hauling units. During early work on the embankment connecting the south end of the low-sill structure and the main line Mississippi River levee, excavated material was very wet and it was placed in small lifts and allowed to dry thoroughly before the next lift was placed.

Foundation piles

Even before excavation for the structure and stilling basin were complete, the contractor started driving

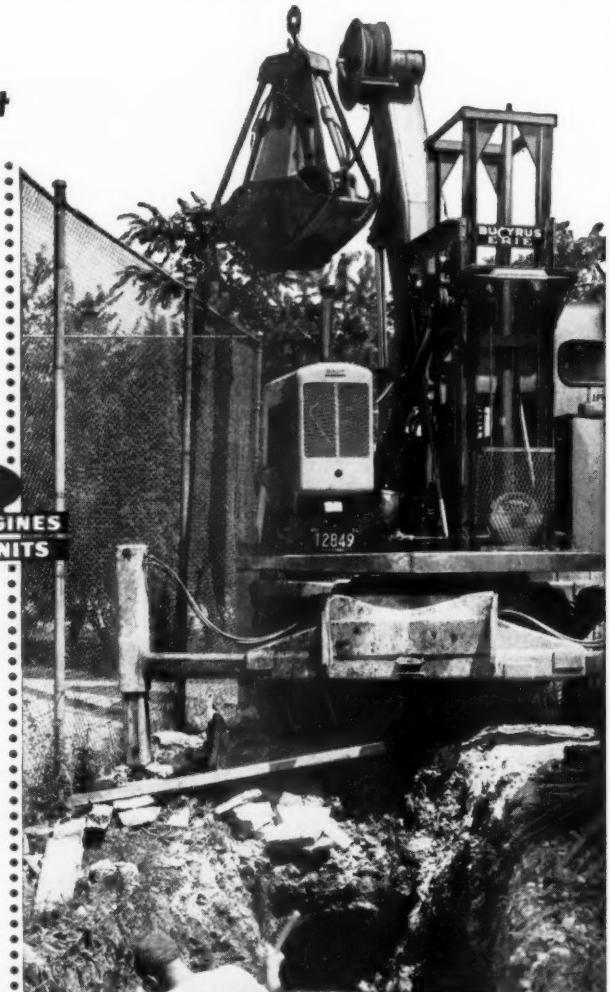


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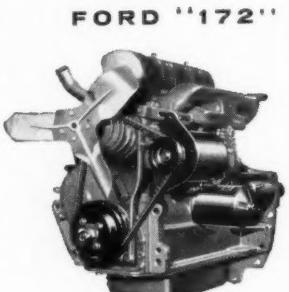


The Bucyrus-Erie Model H 3 Hydrocrane that Mr. Volk operates for the village of Fox Point is powered by a Ford "172" industrial engine. Built for versatility, mobility and economy, the Hydrocrane gives precision control through a hydraulically operated closing bucket and a variety of attachments. Upper deck revolves 360° with telescopic high-lift boom capable of from 30- to 38-ft. full load length. Hoist rams provide free line speed of up to 190 f.p.m. with 6,000 lbs. line pull. Ford Industrial Engines can provide similar power plants for all the major types of construction equipment.

It will pay you to specify Ford engines on your next piece of equipment because Ford is the only industrial engine manufacturer to offer modern Short Stroke design in a full line of overhead-valve 4-, 6- and 8-cylinder engines. These engines cut piston travel and piston speed which reduce friction and wear. The result is more usable power and extended engine life. This means you get jobs done quicker and more economically.

Right down the line . . . from the 134- and 172-cu. in. 4-cylinder engines . . . to the powerful 6-cylinder 223-cu. in. engine . . . and the big heavy-duty V-8's of 272 and 332 cu. in. displacement, you'll find Ford engines are years ahead in engineering. Engines that are designed to give power-packed performance more economically and for a longer period of time.

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INDUSTRIAL ENGINE DEPT., FORD Division of FORD MOTOR COMPANY, P.O. BOX 598, DEARBORN, MICH.
For more facts, use Reader-Reply Card opposite page 18 and circle No. 223

the 1,920 steel 14-inch H-beam piles, weighing 73 pounds per foot, that will prevent the structure from sliding horizontally or settling. About a million dollars worth of piling, reinforcing steel, and other materials, stockpiled at the site before this work began about a month ago, are required, because the low-sill structure is being built in an abandoned channel of the Mississippi River. Soils beneath the structure consist of alternating strata of silt, silty sand, and sandy silt, with some clay strata, that go to a depth of 50 to 60 feet. Beneath this is a 40 to 60-foot layer of clean sands, which is underlaid by stiff tertiary clays.

The piles, being driven beneath the gated portion of the structure and the abutment piers, are designed for a load of 100 tons in compression and 40 tons in tension. A total of 1,466 of them, driven on a 2 on 1 batter, will be beneath the weir and pier sections. Alternating rows will have an upstream and downstream batter. A total of 454 vertical piles are being driven beneath the upstream portion of the weir section.

These piles are being driven through approximately 65 feet of silt and sandy silt to a minimum penetration of 27 feet into the clean sand. A 4-foot allowance is being made for any variation in the level of the bearing sand. The shortest piles to be driven are 79 feet; the longest piles measure 131 feet. The latter, made of 60 and 71-foot lengths, welded together, are being driven in one piece by a Koehring dragline rigged up specially for this job.

Outflow channel

The area to be occupied by the outflow channel from the low-sill structure to the Red River, which will be more than seven miles long and have a bottom width of 900 feet, is currently being cleared by Joe E. Freund, Monroe. About 2,500 acres are being cleared, this work moving from near the Red River upstream toward the structure. The major growth in this area—red oak, cottonwood, pecan, and hackberry—is being cleared for a distance about 1,450 feet on each side of the centerline of the outlet channel. About 500,000 board feet of oak and hackberry, salable as lumber, are being shipped out by barge.

Clearing is done with four Allis-Chalmers tractors, equipped with shop-made sawtooth snout-like attachments mounted in front. Several sizes of these cutting attachments are in use for the different types of growth being cut. Small brush is being cut by a rotary blade mounted behind a jeep, and stumps are being poisoned with Du Pont amate mixed with water, diesel fuel, and an emulsifying agent. Brush is being piled and set alight, and two Cat D4 tractors are used to prod the fire.

The outflow channel, 7 miles long and with a bottom width of 900 feet at -8.0 near the structure and -10.0 at the Red River, will be built under four contracts. The first, for the dredging of about 13,400,000 cubic yards of material, will be let this fiscal year and the actual work is expected

to get under way in January when the water level in the Red River is usually high. The work, which will start at the Red River end of the channel and move toward the low-sill structure, will be started at this time, because the Red River banks are high and low water in the river would make dredging difficult.

Supply contracts for the gantry cranes and vertical lift-type gates for the low-sill structure will be let shortly, and only when the low-sill structure is complete will the inflow channel from the Mississippi River be started. This channel, about half a mile long, will have a bottom width

of 1,000 feet at -5.0. The second of the two control structures, the 3,356-foot-long concrete overbank structure, will also be started this year.

Personnel

Construction of the Old River control project is under the general supervision of the Mississippi River Commission, Corps of Engineers. Direct supervision is being carried out by the New Orleans District. Col. William H. Lewis is district engineer, and Adolph Hedegaard is project engineer for the New Orleans District.

In charge of work for F & C Engineering Co. is Frank Mitchell. Joe E.

Freund is supervising both subcontracts held by his company, one for excavation for the low-sill structure and one for the clearing of the outlet channel. E. J. Alexander is in charge of operations of the Independent Wellpoint Corp.

THE END

Road plan defended

Louis S. Rothschild, Under Secretary of Commerce for Transportation, has assured states that the new highway program will not compete with present toll roads; rather it may increase the toll road traffic.

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New scraper attaches to rear of tractor

■ A high-speed scraper that attaches to the quick hitch of the International 300 utility tractor is announced by the Western Equipment Mfg. Co. The Overland scraper is said to do an

excellent job of grading and leveling as well as making excavation easier.

The rig has four ripper teeth located in front of the blade for breaking hard, dry soils and making load-

The rear wheels of the Overland scraper are set within the frame to allow operation close to obstructions.

ing easier. The rear wheels are set inside the scraper frame to allow cutting close to banks and obstructions.

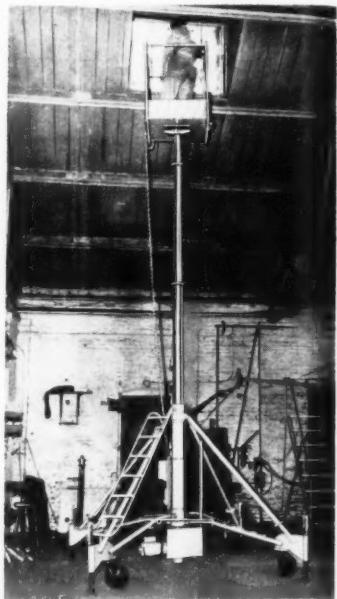
The load-carrying capacity of the Overland scraper is reported increased 50 per cent by the automatic apron which allows the scraper to be lifted free of the ground for quick transport over obstructions, ditches, curbs, and the like.

For further information write to the Western Equipment Mfg. Co., 105 S. Kenwood St., Glendale, Calif., or use the Request Card at page 18. Circle No. 28.

New mobile access lift operates hydraulically

■ A hydraulically-operated mobile access lift that reaches up to 42 feet above floor level is announced by The Ballymore Co. According to the company, it can be used indoors or outdoors and folds compactly for easy transport through doors, along narrow corridors, and in elevators.

Screw-type jacks at the four corners of the base hold the lift in a



The Ballymore hydraulic mobile access lift will reach 42 feet and support 350 pounds.

steady, level position. The lift rides on large, swivel-type casters. The platform, which measures 27 inches square, is rated at 350 pounds. It is equipped with 3-foot guardrails and can be rotated 360 degrees.

The lift is available in six models for heights between 19 and 42 feet. All models have a 110-volt, 60-cycle, single-phase pump motor, plus a hand-operated pump for use where electric power is unavailable.

For further information write to The Ballymore Co., Wayne, Pa., or use the Request Card at page 18. Circle No. 132.

Portable plant design

■ The design and construction of portable and semiportable rock-crushing and screening plants employing Symons cone crushers and vibrating screens are explained in a bulletin from the Nordberg Mfg. Co. Engineering drawings for nine different types of plants are accompanied by a specification sheet listing the equipment recommended for various plant capacities, and properly sized materials.

To obtain Bulletin 238A write to the Nordberg Mfg. Co., Chase and Oklahoma Ave., Milwaukee 1, Wis., or use the Request Card at page 18. Circle No. 72.

To fill a hurry-up government order, Aeroil Products Co., South Hackensack, N. J. shipped three Aeroil road-building kettles, weighing 4,800 pounds each, from Newark N. J. to San Francisco, Calif., by air freight.

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A desk calculator with automation, this new Monroe-Matic speeds up road work figuring and eases the load on time-limit estimating. The exclusive ability to compute length x width x depth in one continuous operation—without keyboard resetting—has put this calculator on hundreds of job sites all over the country. Determining curve radii; computing grade line elevations; traverse problems in coordinates, latitudes and departures, cuts and fills—here is double assurance of accuracy on any engineering or construction problem. This versatile machine also saves real time on payroll, cost control, inventories, many other calculating problems. It is a veritable figure-work bulldozer.

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For more facts, use Reader-Reply Card opposite page 18 and circle No. 225

MONROE

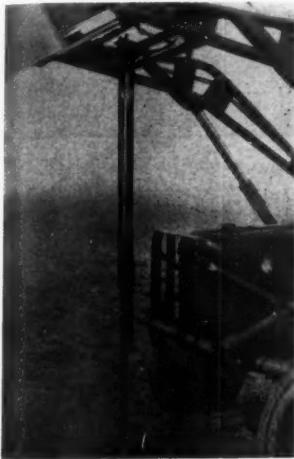
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ADDING ACCOUNTING
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CONTRACTORS AND ENGINEERS

Post driver attachment operates on most loaders

A fence-post driver that attaches to any hydraulic loader has been announced by the Dillon's Dilly Driver Co. According to the company, the driver also operates efficiently on almost all chain and manual loaders.

The Dilly Driver features a hollow steel shaft which is bolted to the



The Dillon Dilly Driver attaches to the crossbar of a loader by means of a special U-clamp.

crossbar of the loader by a special U-clamp. The driver shaft fits over the steel post and keeps it plumb. There is an adjustable guide attachment which allows each post to be set to any desired depth.

By disconnecting the driver shaft and running a chain or rope through the U-clamp, fence posts can be pulled out. The guide attachment also works as a safety device in case of mechanical failure of the loader.

For further information write to the Dillon's Dilly Driver Co., Galva, Ill., or use the Request Card at page 18. Circle No. 128.

Tape measure features direct dial readings

An extension tape rule that permits readings from a dial on its case is announced by the Frederick Post Co. The Rulo-Matic Model 3303 shows measurements down to 1/16 of an inch with extreme accuracy, the manufacturer reports.

The triple-coated, white-face tape is counterbalanced with an inner return spring for smooth operation. Oiling and cleaning pads automatically swab the blade every time it is used.

For further information write to the Frederick Post Co., 3666 N. Avondale Ave., Chicago 18, Ill., or use the Request Card at page 18. Circle No 110.



The Rulo-Matic Model 3303 self-reading tape is calibrated down to 1/16 inch.

SIXTEEN-TON LOADS OF STEEL GET A COMPACT RIDE to the job site on this International truck with a special narrow cab, a recent addition to the fleet of the George R. Borrmann Steel Co. The Oakland, Calif., firm finds the vehicle capable of carrying a maximum cargo of beams up to 30 feet long while remaining within legal limits. The truck is equipped with a one-man, 50-inch-wide, centered cab which permits the balanced carrying of truck-long lengths of steel. Along each side of the cab, 21 inches of space is provided. The cab is equipped with a roof hatch in the event both doors are blocked. The truck is powered by an International Blue Diamond 308 engine, and has a 7,000-pound front axle and a trailing axle. For more details on the truck circle No. 189 on the Request Card at page 18, or write to the International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill.



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supercharged
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flying
executive"*

Charles D Blackwell



This is how Charley Blackwell, veteran executive pilot, referred to the Six-Eighty Super Aero Commander after his first flight. Blackwell is chief pilot and head of the Aviation Department of W. B. Osburn of San Antonio. The oil and gas producing company is now flying its second Aero Commander from the Gulf Coast to Canada.

AERO

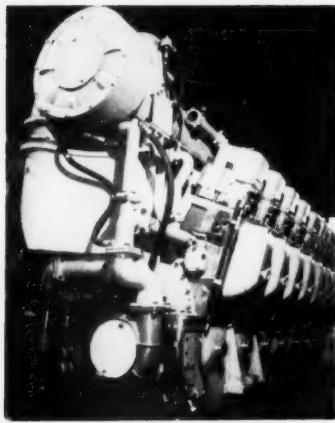
Commander



For complete information see your nearest Aero Commander distributor or write for Catalog 134-S

AERO DESIGN & ENGINEERING CO. • TULAKES AIRPORT • P.O. BOX 118 • BETHANY, OKLAHOMA

For more facts, use Reader-Reply Card opposite page 18 and circle No. 226



Largest of Alco's new Series 251 diesel engines is a 16-cylinder V-type unit rated at 2,400 horsepower.

Turbosupercharged plants turn out up to 2,400 hp

■ Turbosupercharged diesel power plants with horsepower ratings of from 550 to 2,400 at 1,000 rpm are announced by Alco Products, Inc. The engines are available in 6, 12, and 16-cylinder models and weigh from 11 to 21 tons, depending upon the model.

Recommended for heavy-duty temporary power needs—such as those created by tunnel jobs—and for use on barges and dredges, the medium-speed Series 251 units are said to have fewer parts than comparable engines. The turbosupercharger is an integral part of the block and has only one moving part—the turbine wheel which operates from the engine's exhaust gases.

According to the manufacturer, the power of the 251 engine is increased by a fin and tube aftercooler designed to lower temperatures of the compressed intake air between the turbosupercharger and the cylinders. An attached engine-driven booster pump maintains constant fuel pressure. All or any one injection pump may be cut out manually as an added precaution, the company reports.

For further information write to Alco Products, Inc., Schenectady 5, N. Y., or use the Request Card at page 18. Circle No. 5.

Overseas jobs with Corps

Positions for engineers, personnel officers and assistants, administrative assistants and officers, maintenance men, clerks, typists, secretaries, and other specialized fields are available with the Eastern Ocean District of the U. S. Army Corps of Engineers. Salaries range from \$4,480 to \$8,990 per annum.

Application for federal appointment (Standard Form 57) may be obtained from a first or second-class post office or any federal agency, and should be filed with the Civilian Personnel Officer, Eastern Ocean District, Corps of Engineers, U. S. Army, 346 Broadway, New York 13, N. Y.

Jobs are available in Greenland, Iceland, Labrador, Newfoundland, Pakistan, French Morocco, Okinawa, Japan, Iran, Panama, and Eritrea. Positions are also open in Bermuda and the Azores.

THE NEW \$750,000 COLISEUM in Phoenix, Ariz., features what is reported to be the world's largest trussless steel roof—a clear span 120 feet wide and 260 feet long. The span covers the middle portion of the new arena and eliminates the need for pillars, posts, purlins, trusses, or support of any kind. The complete roof deck was erected in 7½ days. It consists of curved 18-gage galvanized corrugated steel sheets, 2 feet wide and 6 to 10 feet long, fastened by nuts and bolts to form self-supporting arches. For more details on this trussless roof, which is available in widths of from 60 to 120 feet, write to the Wonder Building Corporation of America, 30 N. LaSalle, Chicago, Ill., or use the Request Card at page 18. Circle No. 1200.



PAYLOADER



Ram twin-screw, self-powered rotary snow plow is an efficient, proven "PAYLOADER" attachment.

Ever since Hough pioneered and introduced the first unit-design tractor-shovel and called it a "PAYLOADER", the versatility and all-year usefulness of these units have sold themselves in great numbers to contractors and public bodies. Today, "PAYLOADER" tractor-shovels are an even better buy because the designs have been constantly improved, because of a wide range of sizes and types, and because there are more and better attachments available.

Notable features of today's "PAYLOADER" line include torque-proportioning differentials, no-stop power-shift transmissions, powerful 40-degree bucket breakout at ground level, planetary final drives and hydraulic-system load shock absorbers.

Your "PAYLOADER" Distributor is ready to show you how the superior design and greater versatility built into "PAYLOADER" tractor-shovels enable them to do more work, more days of the year.



with any combination of socket wrench handles.

According to the manufacturer, the bits are specially hardened to withstand heavy use and are easily replaced when worn. They are held in their sockets by means of roll pins which extend through the socket and the bit.

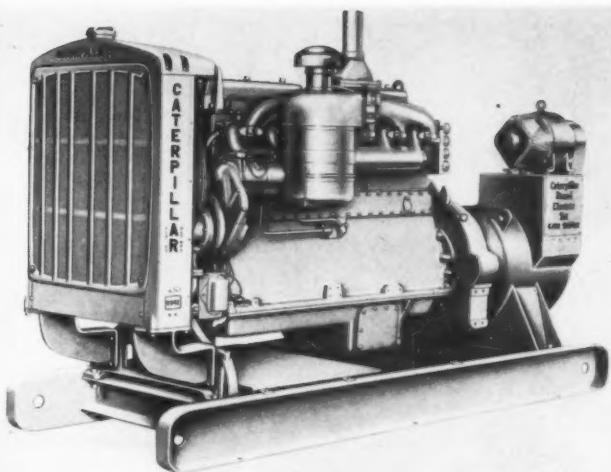
An adapter included with the set permits the use of $\frac{3}{8}$ -inch square-drive sockets on $\frac{1}{2}$ -inch square-drive handles.

For further information write to the Snap-On Tools Corp., 8028 28th Ave., Kenosha, Wis., or use the Request Card that is bound in at page 18. Circle No. 29.

The winter construction section begins on page 50.

Socket wrench driver set
turns hex-head screws

■ A new hex-head driver set that will turn 5/32 to 3/4-inch hex-head screws is announced by the Snap-On Tools Corp. The set is designed for use



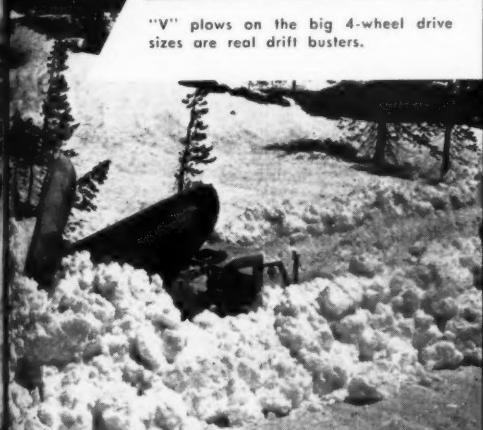
The new, self-regulated, 100-kw Cat D342 electric set is capable of extremely close voltage regulation.

At Your Service

12 MONTHS OF THE YEAR



Ram pick-up street sweeper mounts under bucket — dumps its loads into trucks.



"V" plows on the big 4-wheel drive sizes are real drift busters.



Wain-Roy hydraulic back-hoes make a "PAYLOADER" a double ended digger.



Special large-capacity snow buckets are available for faster clean-up work.

USEFUL ATTACHMENTS

- | | |
|------------------|--------------------|
| R" line | |
| no-stop | Haulic Back-hoes |
| 0-degree | |
| Very fine | Up Street Sweepers |
| sorber | |
| Very Snow Plows | |
| eady to | Snow Plows |
| greater | |
| tractor | de Snow Plows |
| ore day | |
| ill Blades | |
| d-clearing Rakes | |
| | Log Grapples |
| | Scarifier Teeth |
| | Snow Buckets |
| | Crane Hooks |
| | Fork Lifts |
| | Pusher Plates |
| | Winches |



PAYLOADER™

MANUFACTURED BY
THE FRANK G. HOUGH CO. LIBERTYVILLE, ILL.



THE FRANK G. HOUGH CO.

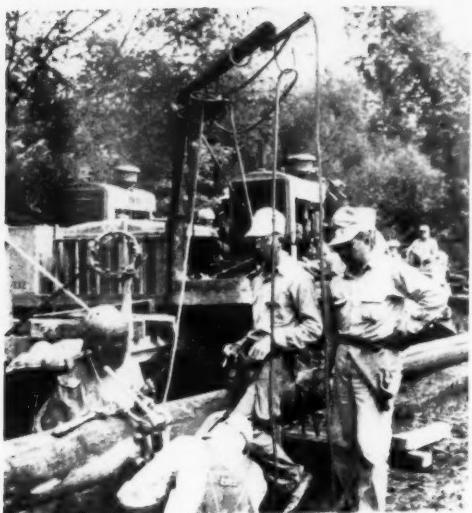
THE FRANK G. HOUGH CO.
762 Sunnyside Ave., Libertyville, Ill.

Send information on "PAYLOADER" tractor-shovels and attachments for public works.

Name _____
Title _____
Gov't. Unit _____
Street _____
City _____ State _____

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 227.





Work on first coal pipeline poses welding difficulties

Stringer-pass welders, using 5/32-inch Fleetweld 5-P to weld the 10-inch pipe, are working with two Lincoln 300-amp diesel-driven welders mounted on the tractor.

**Pulverized coal, suspended in water,
to be carried 108 miles;
pipe has heavy steel wall sections
to resist corrosive effects**

Allis-Chalmers
LOW-COST
Model D

BIG
in power
in strength
in versatility



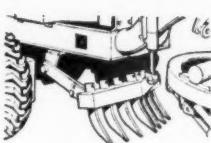
THE MODEL D GRADER HAS THE POWER to tackle bigger jobs. With either 50-hp gasoline engine or 50-hp diesel engine, there's extra torque and lugging ability for top performance on all projects.

BIG-GRADER DESIGN means long life for the Model D — regardless of the job. Strong, single-member main frame . . . husky drawbar and one-piece circle . . . work-boosting ROLL-AWAY moldboard . . . ground-gripping tandem drive . . . precision control . . . easy operation and simple servicing — all are plus performance advantages.

JOB-MULTIPLYING ATTACHMENTS make the Model D a specialist on many applications:

ROLL-AWAY is an Allis-Chalmers trademark.

See the Model D at your Construction Machinery Dealer — headquarters for True Original Parts and Service.

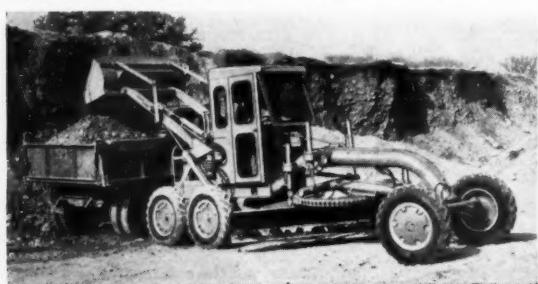


HYDRAULIC SCARIFIER — exclusive mid-ship mounting under D's heavy end for better steering, maximum traction and full penetration. With seven removable teeth, scarifier cuts a swath 27 1/4 in. wide.

ALSO output-boosting extras — rear-mounted 5 1/2-yd loader, shoulder maintainer, windrow eliminator, snowplow blades. Plus optional equipment — including power circle turn, shiftable moldboard, leaning front wheels, all-weather cab, heater, etc.

ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION
MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS



For more facts, use Reader-Reply Card opposite page 18 and circle No. 228

A coal pipeline—the first of its kind in the country—is perhaps the most unusual pipeline recently constructed anywhere.

When the 10-inch line is put into operation early in 1957, coal from the Hanna Coal Co. strip mines near Cadiz, Ohio, will be pulverized and suspended in water, pumped at a rate of about 3 1/2 mph from the mines to the Cleveland Electric Illuminating Co.'s Eastlake generating plant, just east of Cleveland. After the 108-mile trip, the coal will be dried and fed into the station steam generating boilers. This method of delivering a maximum of 1,300,000 tons of coal to the station was devised, after five years of research on the project, by Pittsburgh Consolidation Coal Co.

Pipe wall thicknesses

Because of the corrosive nature of the material that will pass through the pipe, this line was constructed of high-tensile steel pipe with heavy wall sections. Five different pipe-wall thicknesses were used in the line. All pipe is 5LX-42 specification, and most of it was furnished with a 30-degree bevel for welding on the end. A small amount of the pipe has 37 1/2-degree bevels.

Three Lincoln diesel-engine-driven welders and 19 gasoline-engine-driven welders supplied the welding crews, which averaged 2 1/2 miles of line per day, even in bad weather. Stringer beads were used for all but the cap pass, which was a wide weave. Two stringer bead welders, using 5/32-inch-diameter Lincoln Fleetweld 5-P stripped 3 inches, top and bottom, before moving pipe to make the next lineup. Shield-Arc 85-P was used by the three men making two hot passes.

Pipe kept hot

The twelve men working on filler passes behind stringer and hot-pass welders used 3/16-inch 85-P, and Fleetweld 5 was used for the cap pass. In cold weather, pipe was not allowed to cool between passes, and this eliminated the need for preheating. The filler-pass welders, following stringer and hot-pass crews, kept two joints hot continually by alternating their welding operations between the two joints.

THE END

CONTRACTORS AND ENGINEERS



The Vibrapipe machine produces tongue-and-groove concrete pipe as small as 4 inches in diameter.

Tongue-and-groove pipe made in small diameters

■ A machine that will make concrete pipe as small as 4 inches in diameter with a tongue strong and precise enough to accommodate Tylox rubber gaskets is announced by the George W. Hoffmann Co. The Vibrapipe high-production concrete pipe machine forms tongue-and-groove pipe in diameters up to 12 inches and lengths up to 4 feet.

According to the machine manufacturer, contractors using the tongue-and-groove pipe with Tylox rubber gaskets have reported they are able to place twice the footage in a given period of time than they could with conventional bell-end concrete pipe.

Whereas trenches must be wider at the juncture of two pieces of bell-end pipe, the connection of two lengths of Vibrapipe does not increase the pipe's diameter at all. The calking of bell-end pipe is eliminated as the Vibrapipe needs only a thin coating of mortar to close the seam, the manufacturer points out.

For further information about the Vibrapipe concrete machine write to the George W. Hoffmann Co., P. O. Box 452, Sioux City, Iowa, or use the Request Card at page 18. Circle No. 153.

Film on scraper operation

The Euclid Division of General Motors Corp., Cleveland, Ohio, has released a 10-minute film on the operation of the S-18 scraper. Entitled "Contractors Decision", the film covers the performance, dependability, and maintenance features of the scraper, an overhung engine-type, 18-yard-struck unit with 300-hp Torqmatic drive.

A 16-mm, sound-color film, "Contractors Decision", may be borrowed from Euclid dealers, or Euclid's regional or main offices.

Portable rod bender

■ The Ironmaster, a portable hydraulic rod bender and shear, is presented in a bulletin from the Midland Products Co. The reinforcing rod fabricator, available in five models, is shown mounted on its own wheels and axle, and towed behind a truck. The specification chart states that the unit is powered by a Briggs & Stratton 8.4-hp engine.

To obtain the bulletin write to the Midland Products Co., 181 Greenwood Ave., Midland Park, N. J., or use the Request Card at page 18. Circle No. 68.

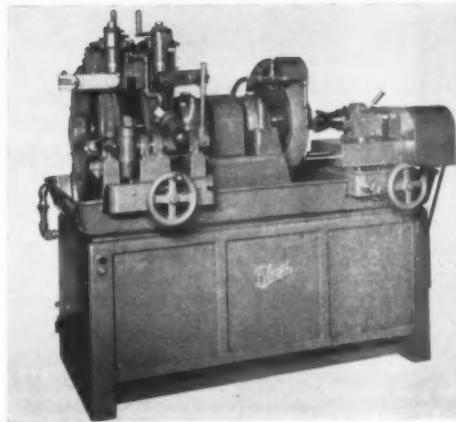
Line of detachable rock bit grinders

■ A line of grinders for sharpening detachable rock bits is available from the J. G. Blount Co. Models R2W-14 (floor type) and B2W-14 (bench type) are recommended for sharpening conventional cross bits, either steel or carbide; the Model R3W-20 is recommended for sharpening X-type bits up to and including 4½ inches in diameter.

In all models, the motor is mounted on a hinged plate in the base with a V-belt drive to the spindle. The fluting and gaging fixtures are the slide type with screw feeds. They are completely covered for protection against water and grit.

The coolant tank on all models is

The Blount Model R3W-20 grinder is recommended for sharpening X-type bits as large as 4½ inches in diameter.



20 has a 28-gallon tank.

For further information write to the J. G. Blount Co., Everett 49, Mass., or use the Request Card at page 18. Circle No. 100.



IMPOSSIBLE WITHOUT EXPLOSIVES

The modern highway—wide and spacious with increased visibility and no cross traffic—is a tribute to modern construction techniques. The above section of U.S. 99 between Bakersfield and Los Angeles, California, is a good example of engineering know-how. Where rock was encountered, blasting crews with Hercules explosives took over.

For more than forty years, Hercules has engaged

in continuous research into the development of explosives materials and improved blasting techniques. Whether your requirements are for construction, mining, quarrying, seismic prospecting, or in other fields where explosives are needed, Hercules technical representatives will be glad to assist in the selection of the right materials for the most efficient job.

HERCULES POWDER COMPANY

Explosives Department, 965 Market Street, Wilmington 99, Del.



Birmingham, Ala.; Chicago, Ill.; Duluth, Minn.; Hazleton, Pa.; Joplin, Mo.; Los Angeles, Calif.; New York, N. Y.; Pittsburgh, Pa.; Salt Lake City, Utah; San Francisco, Calif.

XH56-2

For more facts, use Reader-Reply Card opposite page 18 and circle No. 229

The engineering department

Estimating plant and equipment

Field and main office overhead are kept entirely separate and are posted in the job estimate as two separate items. The field overhead varies with each job; the main office overhead is fixed, being calculated from the actual book cost for the year.

In the quantity-analysis method of estimating, indirect labor—such as supervision, clerical help, and all employees not actually working with their hands to construct a permanent part of the work—are classed as indirect labor and charged to job over-

head. Any materials or supplies these people use—supplies which are not incorporated into the structure—are classified as being indirect and charged to job overhead.

In this manner, labor and material units used for pricing an estimate will

include only the mechanics and helpers' labor, plus the cost of the material incorporated into the structure. This permits the actual labor hours in the field for each classification to be checked directly against the hours estimated for the unit. The overhead or burden does not appear in the actual unit costs.

Job overhead wages and salaries on a small job may be itemized or checked off from "job overhead" under the cost code. If numerous small jobs are under construction and a traveling superintendent supervises all the work, his time and expense is pro-rated to each job on his daily time sheet. For estimating purposes, his time is charged on the estimate on this pro-rated basis as the number of weeks that he spends on the job. Labor charges for timekeeper, materials checker, office help, and engineers are handled in a similar manner.

On larger work, the only accurate method of determining field overhead is to build up an over-all job schedule. Then, using this as a base, draw up a general organization chart. If the size of the work warrants it, make departmental charts as shown in figure 1, showing detailed breakdowns of all the indirect labor.

All wages and salaries are listed in the estimate under Job Overhead and posted to the labor column so that the money required will appear in the estimated total labor on which all insurance is based. If desirable, the indirect labor overhead may be totaled separately and calculated as a percentage of the cost of the work. This figure is useful when estimates have to be made quickly at some time in the future.

Overhead materials and supplies

On very small work, the dollar value of supplies that will not become part of the permanent structure is small and is generally ignored. This expense may be absorbed by the main Office Fixed Expense and come out of profits, or it may be taken care of by a lump sum allowed for these items by the estimate and posted in the estimate material column.

On larger work, the indirect materials and supplies will have to be listed, priced, and entered separately in the estimate. The final entry may be in the form of a lump sum based on "standard lists" which have been previously determined as being required for various classes and volume of work. When such a list is used, it is unnecessary to post the items in detail.

The indirect materials and supplies—including such things as applica-



**for powering
heavy duty
excavators...**

P&H diesels give you double value**1. Money Making Power...**

For steady production at a high profit you can't beat the P&H Diesel 687-C18 for powering heavy duty excavators. It has the power, response and stamina to give you smooth, fast work cycles with every excavator attachment. You do more work, faster, at a lower cost.

A rugged, fast accelerating engine with a high torque, this 6-Cylinder P&H Diesel furnishes power to successfully handle the variable loads and momentary overloads encountered especially in shovel, dragline and trench-hoe services.

Costly down-time for restarts is held to a bare minimum. When heavy digging is encountered, the 2-Cycle P&H Diesel 687-C18 has the reserve power and punch to "pull through" without stalling or stalling.

P&H Diesel Engine Division
Harnischfeger Corporation
Crystal Lake, Illinois

Please send me complete information on P&H Diesel Engine 687-C18 for powering heavy duty excavators.

Name _____

Company _____

Street _____

City _____ Zone _____ State _____

2. Money Saving Power...

Also, with a P&H Diesel you burn fewer gallons of low-cost fuel, you operate with less down-time for servicing and repairs, you experience longer periods between overhauls.

These money saving features of P&H Diesel power result from the extra reserve of power which is built into the P&H Engine 687-C18 for heavy duty excavator service. Reserve power minimizes engine stress and strain created by momentary overloads—adds to engine life—lowers maintenance costs—contributes to fuel economy.

P&H Diesel money making and money saving power add up to more power at lower operating cost for greater production and more profit for you.

**It will pay you to investigate
P&H Diesel's unique double values for the
powering of your heavy duty excavators
from 1½ to 2 yards in size.**

For Modern Engineering Look to

HARNISCHFEGER

P&H DIESEL ENGINE DIVISION
Crystal Lake, Illinois

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 230



by GEORGE E. DEATHERAGE, P. E.
construction consultant

This is the tenth of a series of articles on Construction Management by George E. Deatherage, P. E., construction consultant. The articles are based on an eight-volume "Manual of Advanced Construction Management" published by Geo. E. Deatherage & Son, P. O. Box 921, Lakeworth, Fla. The manual is used in a training course for superintendents and project managers, and is directed primarily at those contractor employees who have reached the foreman level or its equivalent and who need practical help in order to take complete charge of construction projects themselves.

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ERS

tions for employment, field and office passes, requisitions, daily construction reports, index cards, payroll checks, purchase orders, drinking cups, soap, towels, carbon paper, binders, blotters, clips, envelopes, and the myriad items needed by employees, may be included in a check list that is broken down by departments.

The engineering department organization chart, for instance, will show the number of men employed and the functions they perform. The check list can be referred to in selecting the materials, special equipment, and supplies needed to take care of this staff. These materials are priced, and the total—including the price of cartage—is posted in the material column of the estimate after the respective department. A similar procedure can be followed in estimating the needs of various other departments.

Better prices for all this material can be secured if the items needed for the entire job are listed and purchased in bulk. It is convenient to place responsibility for all stationery and supplies in the clerical department and all printed forms and procedures in "Production and Planning". Other departments, including field offices, can make their requisitions from these sources.

It generally can be said that it does not pay a general contractor to own

heavy equipment unless his volume of work is enough to keep the machines busy at least eight to ten months of the year. Renting may be better for some contractors, particularly since the equipment-rental business is today a recognized func-

tion of equipment and supply houses and the rental rates are more or less standardized for each locality.

Many of the larger contractors buy new equipment at the start of a project, then sell it when the work is finished. In this way, each new job is

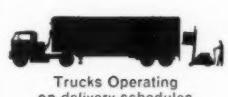
outfitted with the latest type of machinery, selected to secure the best results for that particular work. In this case, the difference between the purchase price and the second-hand selling price is charged to the job. This procedure, usually followed on

NEW!

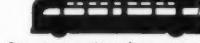
the CLARK TransVerter

**COMPACT
UNIT
"PACKAGE"
OF**

- * **Torque
Converter**
- * **Hydraulic
Clutch**
- * **Transmission**



Trucks Operating
on delivery schedules



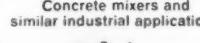
Coaches making frequent stops



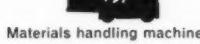
Garbage and trash collection



Concrete mixers and
similar industrial applications



Materials handling machinery



Many stationary power plants
and oil field applications



Now comes more profitable performance for the operators of stop-and-go vehicles—trucks, both highway and off-the-highway, garbage and trash collectors, concrete mixers, materials handling machines and others: smoother, more economical handling made possible by Clark's new TransVerter.

- No heavy clutching—reduces driver fatigue. Easy control of hydraulic clutch by shift lever button, floor button, or light pressure clutch pedal
- Fine inching control with accelerator
- Gear shifting reduced appreciably. Gear changes made quicker
- Closely spaced ratios add to ease of shifting resulting in added transmission life
- Starts smoothly, no stalling, no lugging
- Longer life for entire drive-train—no shock-loading
- Less wheel slip—Tires last longer
- Clutch adjustment eliminated—Result: savings on costly down times
- Excellent accessibility for easy service. Serviceable without special tools by any mechanic familiar with transmissions
- Available for OEM or field conversion

Get the interesting story of these advantages whose economies far offset the moderate additional cost. Send for bulletin.

CLARK EQUIPMENT COMPANY, Transmission Division, Falaehee Road, Jackson 7, Michigan
Please send the TransVerter Bulletin

NAME _____
COMPANY _____
ADDRESS _____
CITY _____ ZONE _____ STATE _____

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OCTOBER, 1956

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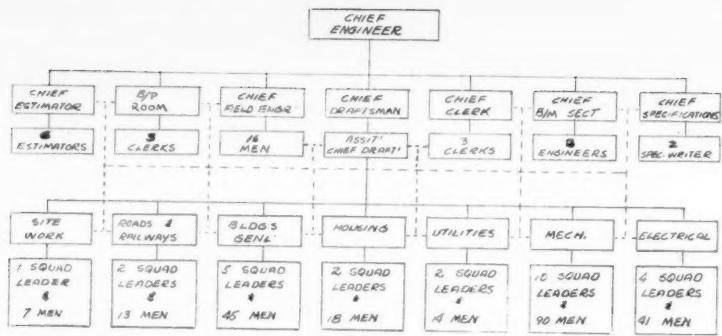


Figure I

jobs of long duration, is felt to be justified if the loss on re-sale is less than the contractor would pay out of his profit to the rental agency. It also saves the contractor the need and cost of reconditioning equipment between jobs.

A few pieces of equipment, such as trucks, are so necessary that often it will pay any contractor to have a sufficient amount of them on hand to take care of immediate needs and avoid lost time on jobs. Trucks such as these, needed for emergency handling of materials, cleanup, and other jobs, are noted as "pickup" trucks in

the Cost Code and can be estimated separately for each job, generally on an hourly basis that includes money paid out for such things as operator, fuel, and lubricants.

Since equipment-rental rates vary throughout the country, the estimator should secure quotations in his locality for each type of equipment needed. A useful addition to his files is the current copy of the average over-all prevailing rates for specified types of equipment, which is put out by Associated Equipment Distributors, 30 East Cedar St., Chicago 11, Ill., at \$5 per copy.

Available also from the AED, or from the Associated General Contractors, Munsey Bldg., Washington, D. C., are standard equipment-rental forms or agreements. Equipment-rental programs sponsored by manufacturers, with the cooperation of dealers, may also prove valuable in many instances. These rental and lease agreements, some of them designed to give the contractor full title to the equipment eventually, might profitably be filed by the estimator for future reference. The estimator should be familiar with all terms of rental-agreements—including those having to do with transportation charges, repairs, and length of rental. As with equipment-rental rates, the rates paid to operators should be secured from the locality in which work is done, and then figured into the estimate.

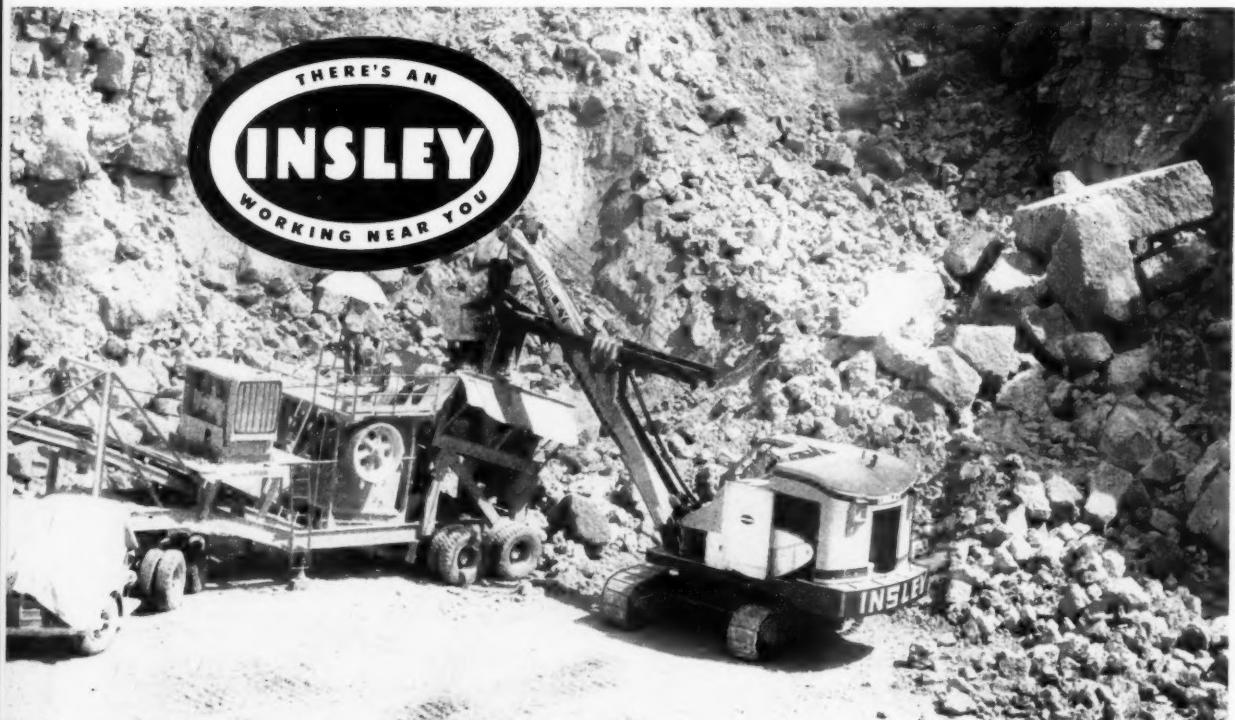
In posting the cost of plant and equipment, the equipment hours should be calculated and multiplied by the hourly rental rate, and then the rate should be posted in the material column. This rate may include the operating cost per hour, or the fuel, gas, and lubricants that can be separately posted under that heading. Transportation, unloading, erection, and cartage should be entered on a separate line or lines.

A safe and conservative practice is to use rental rates for the equipment in the estimate, even though the equipment is owned by the contractor. Thus, any profit made over and above the ownership and operating costs would be used to partially balance losses from idle time during the year.

On large work that is done over a long period of time, equipment may be completely wiped off the books. Here, the equipment is figured into the job costs; it does not enter into fixed expense for the job.

In figuring rentals, remember that if a compressor is rented, only the compressor itself is delivered to the contractor. Air hoses, paving breakers, breaker points, and other equipment are accessories and are separate items on which a separate rental is charged.

Equipment-rental rates, with or without operating and repair expenses, do not include operator rates. These should be obtained for the locality in which the work is being done. The operating cost of equipment, on an hourly basis, should also include the wages of the operator, plus workmen's compensation, social security, and other expenses made by the con-



the INSLEY type WB

full heavy duty 1 yd. Rock Shovel

- Deck and machinery side stands constructed as a one piece weldment.
- Heavy gauge, all steel cab, $\frac{1}{8}$ " protective rear plates.
- Hook and load roller construction.
- Internal expanding mechanical clutches with booster operated drum clutches.
- Independent boom hoist.
- Gasoline, diesel or electric power.
- Crawler, self-propelled Maxi or Lorry (truck) mounting.
- Fully convertible to all front end attachments.

With optional features for any excavator-crane job:

Power Load Lowering ● Independent Travel ● Third Drum ● Fluid Coupling or Torque Converter

INSLEY MANUFACTURING CORP. • INDIANAPOLIS, IND.
Wholly owned subsidiary / THE MAXI CORP. • LOS ANGELES



Figure 1

tractor in connection with wage payments to operators.

The way equipment is handled by the estimator depends a good deal on the type of equipment being used. Sectional steel or aluminum portable scaffolds can be had for practically every job condition, and these can be purchased outright or on a rental basis. If wood scaffolds are to be used, the amount of labor required must be estimated, and allowance made for a predetermined number of mechanic and helper hours per thousand feet of lumber to make, erect, and move the scaffold.

If a small piece of equipment is made on the job, the cost of the machine can be charged off on the first job. However, if it is of considerable value and can be used on other work, it should be capitalized on the books and handled, as any other piece of equipment, on a rental basis.

Some work, like steel erection, pile driving, and caisson jobs, can be done cheaper by a specialist. Sub-bids should be taken on work in this class and checked against the estimated cost of this work for the contractor. If the job can be done for less money under a subcontract, and there is no drawback, such as possible labor trouble while the work is being done, it will be best to let the subcontractor do the work. In any case, the sub-

prices will give a good check against the estimate and the estimated units for a particular phase of the project.

Every job will need tools for laborers and a number of other items like sledge hammers, picks, shovels, rivet

guns, and wheelbarrows that are classed as tools rather than as equipment. Allowance for these and for special tools required for electrical and other specialized work will have to be allowed for in the estimate. A

lump-sum allowance can be made for these items by an experienced estimator if the job to be done is small. If the project is of a good size, these tools should be listed, valued, totaled, and entered in the material column of the estimate. If this is done once for a large job, the record will provide a good reference for future work of a similar nature.

New tools will be charged to the work at the present value; used tools should be examined and a depreciated value charged to the job. When the work is done, these tools should be revalued, then credited to the job when they are returned to the warehouse.

(Next month's article will deal with "The engineering department—process charts and gang process charts.")

SILENT GLOW

Model M offers Big Savings on BIG JOBS

1,000,000 BTU PORTABLE HEATER



**ONLY
\$9.50
F.O.B. Hartford**

capacity. Fuel consumption is 7.00 G.P.H. of No. 2 fuel oil, No. 1 fuel oil or kerosene from an independent fuel supply tank.

One of the Model M features is the patented stainless steel Solar Glow Flame Filter combustion chamber . . . the exclusive combustion system which reburns noxious gases within the flame, insuring complete combustion. Other features include automatic temperature controls . . . overheating safety controls . . . replaceable fuel filters . . . low fuel cut-off.

REMEMBER . . . With the Model M you **SAVE** on initial cost, you **SAVE** on attendant costs, you **SAVE** on service and operational costs.

For complete details contact your Silent Glow Distributor or write, wire or phone

SILENT GLOW OIL BURNER CORP.
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For more facts, use Reader Reply Card opposite page 18 and circle No. 235

- Guaranteed to meet fire resistant requirements of Fed. Spec. CCC-D-746 • Heavy rope in hem • Treatment is permanent • Triple stitched seams, double sewed hems

For more facts, circle No. 234

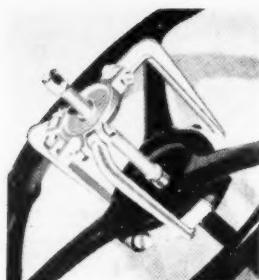
FOR MORE INFORMATION

Steering wheel puller adjusts for most types

A new steering wheel puller has been announced by the Owatonna Tool Co. The unit has adjustable legs to permit its use on most types of steering wheels, regardless of the number of spokes.

The steel ring against which the pull is made is split to slide past the steering column. Quickly set in place, a few turns on the forcing screw eases the wheel off the post.

The OTC puller can be used on most types of cars, truck, and tractors. It can also be used as a 2 or



3-jaw puller.

For further information write to the Owatonna Tool Co., Owatonna, Minn., or use the Request Card at page 18. Circle No. 10.

Centrifugal pumps

The Ingersoll-Rand redesigned line of DMV-DHV single-stage centrifugal pumps is covered in a bulletin. Built in sizes from 3 to 6 inches, the pumps have capacities to 2,400 gpm, according to the bulletin. Installation views, pictures of parts, and cross-section shots of the units are included in the bulletin, as well as standard specifications, a pump-selection table, and an interchangeability chart.

To obtain Form 7248-A write to Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y., or use the Request Card at page 18. Circle No. 59.

J. I. Case plans merger

Directors of the J. I. Case Co., Racine, Wis., and the American Tractor Corp., Churubusco, Ind., have approved plans for a merger of both companies. The proposal has yet to be submitted to stockholders of both firms.

The merger would expand Case, a manufacturer of tractor and farm machinery, into the rubber-tire and crawler tractor and earth-moving equipment field.

The merger would be attained through an exchange of stock. Each American Tractor common share would be exchanged for one-half share of Case common and one share of \$7 par value non-voting second preferred stock.

Under the merger plans, Marc B. Rojtman, president of American Tractor, would become executive vice president and general manager of Case.

IT'S Whiteman ALL THE WAY!

Highest efficiency, maximum speed and greatest economy in transporting and laying concrete is achieved with complete Whiteman mechanization from batching plant to the finished slab.

A. WHITEMAN CHAMPION TRUCK MIXERS offer many important features. Lighter weight, yet handle a bigger pay load. Faster charging and discharging. Easier operation. Less maintenance. Lower original cost. 7 models: 3 to 6½ yds. Rugged Whiteman construction and dependable efficiency.

B. WHITEMAN POWER BUGGIES* have definitely proved to be the fastest, easiest, cheapest way to place concrete. One Power Buggy does the work of five hand buggies. Speeds up to 16 mph, climbs 25% grades, turns on a dime. Never tires or loaf on the job.

C. WHITEMAN VIBRATORS are the finest made, built for outstanding performance and durability. Three "Tailored to the Job" models, gas and electric. Complete line of accessories.

D. WHITEMAN SCREEDING MACHINES do a better job in far less time. Save labor. Screeed to a perfect level. Easily portable. Width adjustable from 3' to 20'.

E. WHITEMAN FINISHING MACHINES are the result of 16 years' experience, incorporate many valuable exclusive features. Float and finish at a fast, money-saving pace, produce an extremely smooth, level slab. Six models for every size job. Rotating and fixed rings.

Call your Whiteman Distributor today or send coupon now for complete information.

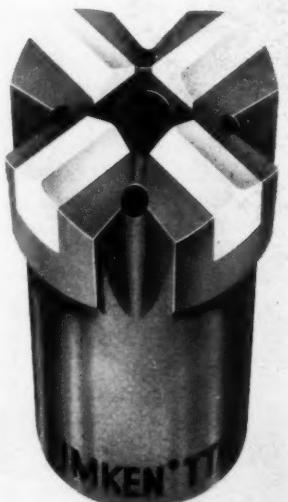
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Please send catalogs, prices and name of distributor for:
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 Screeding Machines Finishing Machines

Name _____
Firm _____
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City _____ Zone _____ State _____

Announce tapered-socket, carbide-insert rock bits

A line of tapered-socket, carbide-insert rock bits, recommended for use in air leg drilling and light stoping, is announced by The Timken Roller Bearing Co. The bits are available for $\frac{7}{8}$ hex and $\frac{7}{8}$ quarter-octagon drill steels.

Among the advantages of the new line reported by the company are: they can be removed from the steel and discarded without throwing away the steel; four-point cross wings give



Timken tapered-socket, carbide-insert rock bits for air-leg drilling and light stoping.

longer life and greater footages between sharpenings; and the tapered pin is easily fabricated on the steel.

According to the manufacturer, jet action from the five-point front-hole design of the new line and the deeper, wider clearance between bit wings make for faster chip removal, improving bit action and increasing bit life.

For further information write to The Timken Roller Bearing Co., 1835 Dueber Ave. S. W., Canton 6, Ohio, or use the Request Card that is bound in at page 18 of this issue. Circle No. 39.

For more facts, circle No. 236

Announce three new mobile FM systems

Three new high-power, low-band, mobile FM radio systems have been announced by the Radio Corporation of America. The systems, incorporated into the RCA Carfone 50 mobile line, include the CMF-100B series for 100-watt output, the CMF-55 series for 55-watt output and the CFM-40 series for 40-watt output.

The new systems are said to provide extended and improved coverage and more economical operation in low band, 25 to 54-megacycle, radio communication. In addition to high power output, they feature low transmit and standby battery drain, RCA reports.

The new systems also have improved receiver circuitry and redesigned power supplies which reduce normal power drain. According to the manufacturer, the transmit drain of the 100-watt system is 55 amp, lower by several amperes than the drain of conventional mobile equipment with only 60-watt power output.

For further information write to the Radio Corporation of America, Front and Cooper Sts., Camden 2, N. J., or use the Request Card at page 18. Circle No. 146.

Pile hammer

The McKiernan-Terry S-20 single-acting pile hammer designed to drive piles into stiff, compacted, and resistant soils is described in a bulletin from the company. The bulletin states that the hammer delivers 60 blows per minute with a force of 60,000 foot-pounds. Diagrammatic pictures of the hammer are accompanied by specification tables and a parts list.

To obtain Bulletin 59A write to the McKiernan-Terry Corp., 100 Richards Ave., Dover, N. J., or use the Request Card at page 18. Circle No. 65.

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Water & Rot Resistant
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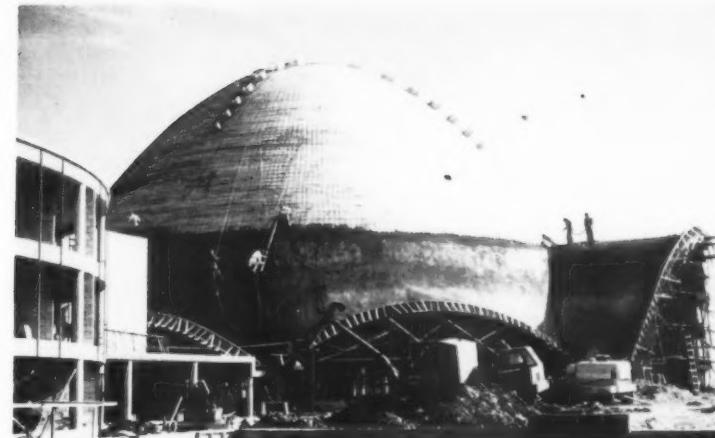
WENZEL product
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- Processed with Aluminum and Elastiseal.
- 43% more heat retention.
- Heavy rope in hem.
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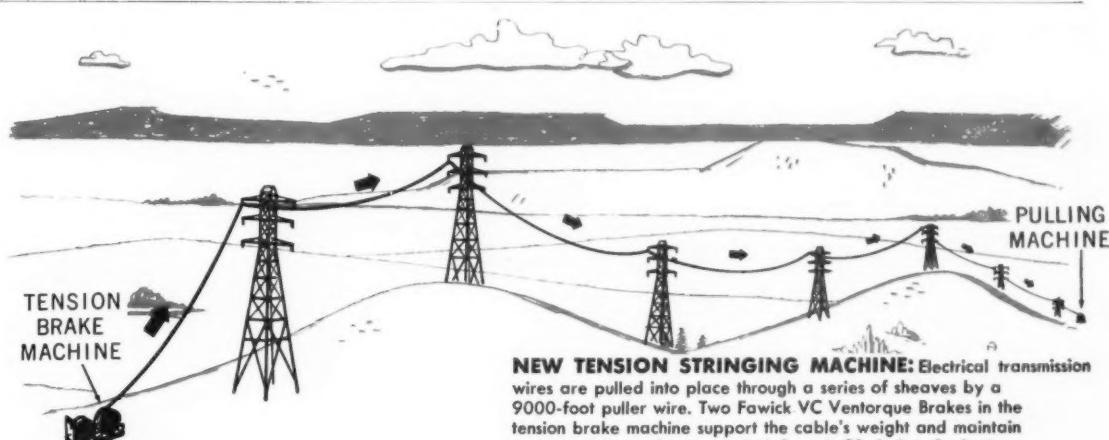
For more facts, circle No. 237

OCTOBER, 1956

THE SANCTUARY BUILDING OF THE CHURCH OF TOMORROW in Oklahoma City, Okla., a thin-shell paraboloid structure 78 feet high and 142 feet in diameter, contains more than 40 cubic yards of concrete. The general contractor, Fredrickson & Parks, used True Gun-All equipment exclusively for all pneumatically applied concrete. With the Gun-All equipment, the nozzleman has no control over the mix; it is mechanically controlled at the machine. Designers and architects for the building were

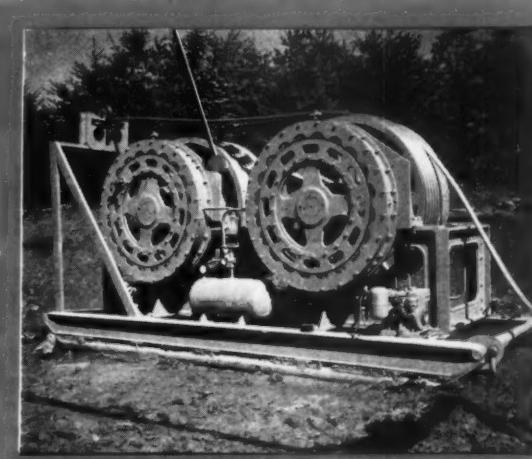


Concrete & Pojenzy. For more details on this concrete-gunning equipment write to the True Gun-All Equipment Corp., 207 Mid States Bldg., Tulsa, Okla., or use the Request Card at page 18. Circle No. 4.



NEW TENSION STRINGING MACHINE: Electrical transmission wires are pulled into place through a series of sheaves by a 9000-foot puller wire. Two Fawick VC Ventorque Brakes in the tension brake machine support the cable's weight and maintain tension against a five-ton pull. A Fawick CS Safety Brake in the pulling machine prevents free spooling of the winching drum in case of engine or transmission malfunction or at time of shut-down.

NEW HIGH-TENSION STRINGING METHOD USES FAWICK VENTORQUE BRAKES FOR ...



TENSION BRAKE MACHINE: Air pressure in the actuating tubes of the two Fawick VC Ventorque units regulates play-out speed of 1 1/4" aluminum cable.

**mighty grip
despite
sustained
slip**

Tension stringing, a new method for simplified erection of power lines, has been proved in service by Hoosier Engineering Company of Columbus, Ohio. Lightweight aluminum conductor cable is removed from shipping reels under controlled tension, and installed on towers without use of supporting structures.

Equipment for this method, designed and built by McJunkin Corporation of Charleston, W. Va., uses two FAWICK VC Ventorque Brakes to control the steady playout of the cable. FAWICK's completely ventilated design prevents overheating of the friction shoes despite constant slippage. They maintain a tight grip to stop excess sagging and prevent dropping of the cable—safety is assured.

FAWICK products are performing many heavy-duty jobs throughout industry. For more information, contact your nearest FAWICK Representative or the Home Office. Ask for Bulletin 500-A.

FAWICK *Airflex*
INDUSTRIAL CLUTCHES AND BRAKES

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In Canada: Fawick Canada, Ltd., Toronto, Montreal

For more facts, use Reader-Reply Card opposite page 18 and circle No. 238



Pit-run gravel is dumped to the service road of the interchange by a Fruehauf 15-yard trailer. A total of 212,000 cubic yards of this rock was used to construct the 11-inch subbase.

Rig breaks rock on roadway for interchange subbase

In-place material reducer is used to produce 212,000 yards of minus-2-inch limestone for service roads



All-wheel traction. With the extra traction of its 4-wheel drive, the 'Jeep' Truck is an all-purpose, performance-proved workhorse for moving men, tools and equipment to or around construction sites. It carries more than a ton of payload, on the road or off—in low-low gear climbs grades as steep as 60°, fully loaded—tows heavily-loaded trailers where other vehicles can't go.

Contractors save time and manpower with 'Jeep' versatility and all-wheel traction!



Transportation. The 4-Wheel-Drive Universal 'Jeep' is always on-the-go—whether carrying engineers for initial surveys, speeding men, equipment and tools to construction assignments, or providing transportation for final inspection work.



Mobile power. Taking power to the job, on-the-road or off, is simplified with a rugged 4-Wheel-Drive 'Jeep' Truck equipped with power take-off and crane, or other specialized equipment. It also operates welders, compressors and generators.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 239

Native rock deposits, which caused some trouble during construction of a \$2.8 million traffic interchange near San Antonio, Texas, proved valuable in another phase of this project—construction of the two-lane flanking asphalt service roads included in the contract.

Located at the San Antonio end of a four-lane freeway that runs 70 miles from San Antonio to Austin, the interchange is being built under a contract that also includes the service roads, five miles of 4-lane concrete roadway and nine concrete and steel bridges.

Killian-House Co., San Antonio, fared worst with the native rock just after roadway excavation started. Plans called for three grade cuts, of 1,400, 2,200, and 2,800 feet in length. But as stripping began on the 2,200-foot cut, which went to a depth between 10 and 31 feet, a large deposit of caliche was uncovered. Big scrapers towed by Cat DW15's and pushed by Cat D8's could not budge the material, and the cut was made only after the contractor used a 1½-yard power shovel to dig the caliche and load it out to haul units.

Rock provides subbase

A native flint-limestone rock located near the project, however, more than compensated for the trouble with the deposit of caliche located on the roadway site, for it supplied 212,000 cubic yards of subbase for the two-lane service roads. This gravel, loaded to Fruehauf trailers by a 1½-yard shovel, was dumped directly on the roadway.

After it had been windrowed by a grader, the rock was reduced to size by a Bros Preparator, which produced an average of 300 cubic yards per hour and up to 400 cubic yards per hour, depending on the size of the material. The average size of the rock was about 6 inches in diameter, but even rocks up to 20 inches in diameter were reduced to less than 2 inches—the size specified for the subbase—in one pass.

Towed at speeds from 1 to 1½ mph by an Allis-Chalmers HD-9 tractor, the preparator used 22 free-swinging hammers of manganese steel to break up the rock. These hammers, mounted on a common shaft, were driven at 1,000 rpm by a poly-V-belt drive. A check, made after 580 hours of opera-

The **'Jeep'**
family of 4-wheel drive vehicles
WILLYS... makers of the world's most useful vehicles

WILLYS MOTORS, INC., TOLEDO 1, OHIO

CONTRACTORS AND ENGINEERS



After the rock has been windrowed by a grader, it is reduced to minus 2 inches in size with one pass of the Bros Preparator. The rig is towed at a rate of 1 to 1½ mph by an Allis-Chalmers HD-9 tractor.

tion, showed that there was no appreciable wear to the hammers.

After the reduced material had been spread in a 5½-inch lift over the roadway, sprinkled and compacted, additional pit-run material was brought in to complete the 11-inch subbase in two lifts. This rock was dumped, windrowed, reduced, and processed in the same way as rock for the first lift.

Compaction problems

The 52 million gallons of water needed for sprinkling purposes during compaction work was obtained from a well drilled adjacent to the road. Originally, the contractor had thought of buying the water from the nearest source and then hauling it to the site. This idea was abandoned because the nearest source was more than a mile away and the operation was more expensive than putting down a well. The water obtained from the well was stored in an 18,000-gallon tank at the site and distributed to the roadbed by a Caterpillar 6,000-gallon tank-trailer.

A number of types of rollers were

used to obtain the minimum 98 per cent compaction established by the Texas State Highway Department. Though subgrade soils varied—different types of clay, gravelly clay, caliche, and gumbo being located at various points along the 5-mile roadbed—proper density was achieved in all cases.

On the subgrade and embankments, where moisture varied from 14 to 26 per cent, depending on the type of soil, a 50-ton pneumatic-tire roller and sheepfoot tamper secured compaction. Rubber-tire, steel-drum, and vibrating rollers were used to get the required density in the subbase.

Concrete and bituminous paving will finish the job. The service roads, with a 4-inch lift of non-pumping material with a low PI spread over

the subbase, will be given a 1½-inch hot-mix asphalt surfacing. When this course has been laid by a Barber-Greene finisher, flat-wheel and tandem steel rollers will make three passes to complete the flexible surface. A 10-inch concrete surface course will be placed over the 86,000 cubic yards of minus-2-inch crushed limestone that forms the 5-inch subbase of the main four-lane road.

THE END

Coffing Hoist news

M. Cleighton Hilbert has been named general manager of Duff-Norton's Coffing Hoist Division in Danville, Ill. Duff-Norton, Pittsburgh, Pa., is a manufacturer of hand and electric-operated hoists.



NEW SUPER MILEAGE LUG TIRE CUTS YOUR HAULING COSTS

PULLS BETTER OFF ROAD, TOO!

Here is a new Firestone tire that will cut your operating costs to the barest minimum.

On hard paving, its deep-ribbed, wide center treads move along smoothly without the tire-wearing, equipment-killing vibrations so often set up by ordinary type heavy-duty tires. As a result, you get more original tread miles. And, heavy lug bars give you all the pulling power you need for off-the-road duty.

Firestone Super Mileage Lug tires have 60% deeper tread to give you more low-cost miles. More than that—they are built with husky, Safety-Tensioned Gum-Dipped® cord bodies. This exclusive Firestone process gives a stronger tire body and makes it possible to get more retreads on every tire.

Any way you look at it, you'll save money with Firestone Super Mileage Lug tires! If you operate dump trucks, cement mixers, logging, mining or any other heavy-duty trucks, it will pay you to contact your Firestone Dealer or your Firestone Store now for the best deal you ever got on the longest wearing, most dependable tire ever built for on- and off-the-road performance!

WHEN YOU BUY NEW EQUIPMENT OR REPLACEMENT TIRES SPECIFY

Firestone

Test after test proves you get extra original tread miles and more retread miles at lower cost with Firestone Super Mileage Lug Tires.

DEEPER TREADS LAST LONGER!



Alumiflame

Fire, Water & Rot Resistant
TARPAULINS



product
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H. WENZEL TENT & DUCK CO.

- Guaranteed to meet fire resistant requirements of Fed. Spec. CCC-D-746 • Heavy rope in hem • Processed with Aluminum and Elasti-seal • Treatment is permanent • 43% more heat retention.

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OCTOBER, 1956

Enjoy the Voice of Firestone on radio or television every Monday evening over ABC.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 241

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Names in the news

Institute names Durelli to engineering department

Dr. August J. Durelli, supervisor of the stress analysis section of the mechanical research department at Armour Research Foundation of the Institute of Technology, has been appointed a professor in the civil engineering department of the institute.

A former construction engineer in Argentina, Dr. Durelli has been active in work with prestressed and reinforced concrete.

Army Corps of Engineers makes four appointments

The U. S. Army Corps of Engineers has appointed three officers and one civilian to positions within the Corps. Maj. Gen. Emerson C. Itschner has been named chief of engineers, succeeding Lt. Gen. Samuel D. Sturgis. Maj. Gen. Itschner's appointment, made by President Eisenhower, must be approved by Congress when it convenes.

In his new position, Itchner will be responsible for the combined military and civil works programs for the nation's defense in wartime, and for the country's water-resource development and control of floods in peacetime. He will also be the head



Maj. Gen. Emerson G. Itschner, new chief of engineers of the U. S. Army Corps of Engineers.

of a combatant Army and technical branch with a peacetime strength of 10,000 officers, 100,000 enlisted men, and 50,000 civilians.

A graduate of the United States Military Academy, West Point, N. Y., Col. Itschner served in both Europe and the Philippines during World War II, and during the Korean conflict, he served as engineer of the first

corps in charge of engineering pertinent to the advance to the Yalu River and the demolition of military structures and installations when troops withdrew from the area. Since March, 1954, he has been responsible for supervising the investigating, planning, construction, and maintenance of federal river and harbor, flood-control, and multipurpose projects.

The Corps has also appointed Col. Aldo H. Bagnulo as district engineer of the Eastern Ocean District, responsible for Corps activities in Greenland, Labrador, Iceland, Bermuda, and the Azores. He will make his headquarters in New York, N. Y.

Col. Morton Solomon, former district engineer of the Eastern Ocean District, has been assigned to the office of the chief of engineers as deputy assistant for engineering and contracts in the office of military construction.

Succeeding Col. Milton P. Barschdorff, recently appointed district engineer of the Vicksburg District, as secretary of the Mississippi River Commission and assistant division engineer of the Lower Mississippi Valley Division is Col. Carl H. Bronn. Formerly stationed in Japan, Col. Bronn has also served in Alaska and Korea.

The new director of research at the Corps of Engineers Research and Development Laboratories, Fort Belvoir, Va., is Dr. George H. Hickox, former program director for engineering sciences with the National Science Foundation. He will be responsible for maintaining a high professional level of research activities at the center.

ASCE announces awards

The American Society of Civil Engineers have announced awards to professors Ralph E. Boeck and Frank E. Richart, Jr., and to Allen J. Curtis.

Prof. Boeck, of the Department of Civil Engineering, Marquette University, won the Ernest E. Howard Award for meritorious service in the field of structural engineering and construction.

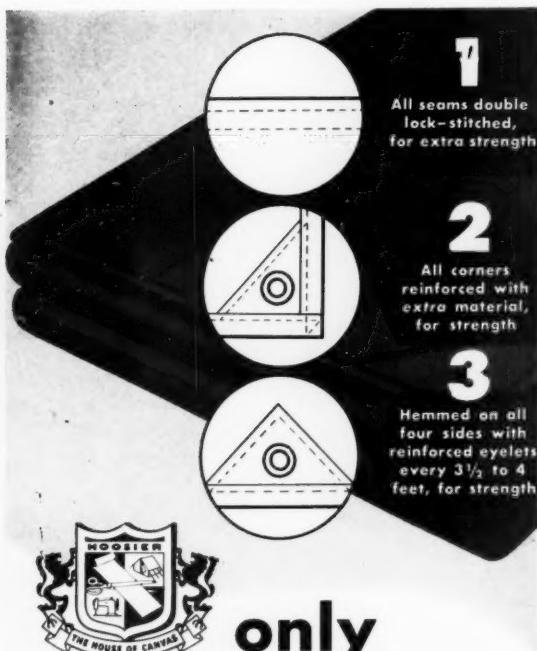
Prof. Richart, of the Department of Civil Engineering, University of Florida, and Mr. Curtis, lecturer in engineering at the University of California, share the Thomas A. Middlebrooks Award. They presented a paper on "Photoelastic Analogy for Non-homogeneous Foundations."

The J. C. Stevens Award for a discussion of hydraulics was won by Serge Leliavski.

The awards will be made in Pittsburgh, Pa., at the society's convention this month.

Serkowich named director

Joe H. Serkowich, vice president of Aubrey, Finlay, Marley & Hodgson, Inc., Chicago, Ill., advertising agency, has been made director of the company. He was formerly associated with Caterpillar Tractor Co., and LeTourneau-Westinghouse.



only Hoosier tarps

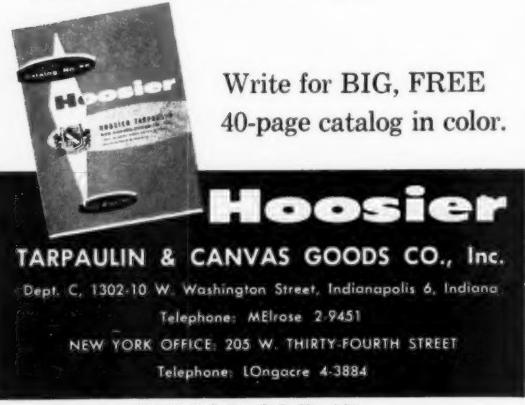
give you these exclusive features
at no extra cost!

- Hoosier tarps are made stronger for lasting protection against wind, rain, or snow. For every purpose—as windbreakers, building material and equipment covers!
- Hoosier tarps are the toughest, longest-lasting tarps you can buy!
- Hoosier tarps are made from new top quality canvas or nylon materials, treated to resist flame, water and mildew!
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Buy HOOSIER TARPS from your supplier or order direct.

Freight prepaid on orders of \$100 or more!

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- Lifts over 20 ft. in 17 seconds—3000 lb. capacity
- Heavy duty welded boom and frame of double-strength pipe and plate construction; chrome plated hydraulic shafts
- Automatic self-leveling—adjustable, non-till forks
- Powered by new Minneapolis-Moline "445" Tractor
- Power steering . . . Ampli-Torc Transmission
- Improved flotation without ballast or Hydrofill. (Wheels, Axles and Oversize Tires engineered to the load each will carry)
- Double-Disc Brakes . . . Rear Wheel Drive
- Increased to 53 Horsepower
- Dependable — Versatile — Safe

The West SKYTRAK "445" when used in conjunction with the other components of the WEST SYSTEM . . . STANDARD AND HALF BRICK BUGGY, STANDARD AND HALF HI-LIFTS and MORTAR BUGGY, is the ONLY complete handling system to move materials from supplier to mason's work station.

Without cost or obligation, please send me full particulars on:	
<input type="checkbox"/> The New SKYTRAK "445"	
<input type="checkbox"/> The West System—"Keep Masonry Materials on the Move!"	
Name _____	_____
Firm _____	_____
Address _____	State _____
City _____	_____

WEST
BRICK BUGGY CORPORATION
4310 Mayfield Road Cleveland 21, Ohio

For more facts, use coupon or circle No. 243

Brown & Blauvelt directs work on Liberian highway

Construction of a new 150-mile-long highway in the interior of Liberia will get under way this fall under the supervision of Brown & Blauvelt, New York, N. Y., consulting engineers. Near the French West African border, the highway will run in a northerly direction to Zorror, then northwesterly to Vonjeme, westerly to Kolahun, and southwesterly to Kalahun. The highway will be of the secondary type, built of locally-available materials.

Eugene Macdonald retires from engineering firm

Eugene L. Macdonald, the last surviving member of the firm's original partnership, has retired from Parsons, Brinckerhoff, Hall & Macdonald, Inc., New York, N. Y., consulting engineering firm. He will continue as chairman of the board of directors.

Another partner in the firm, Lawrence S. Waterbury, also retired at the same time as Macdonald. Both men will serve the firm as consultants.

Edwards, Kelcey & Beck assigns engineer to Iraq

The Newark, N. J., consulting engineering firm of Edwards, Kelcey & Beck has assigned R. H. Baldock as chief engineer of the E-K-B Highway Mission in Iraq. He replaces E. L. Worthington in the post.

Baldock will work with the International Cooperation Administration in assisting the Iraq Directorate of Public Works in the further development of modern highways.

Worthington has been assigned to the firm's construction section of the Connecticut Turnpike.

Idaho appoints new state highway engineer

G. Bryce Bennett has succeeded E. V. Miller as Idaho state highway engineer. Bennett started with the Idaho Department of Highways in 1940 and, prior to his present appointment, he was the assistant state highway engineer.

A civil engineer, he is a member of the Idaho Society of Professional Engineers, the National Society of Professional Engineers, and an associate member of the American Society Engineers.

Bulldozer blades

A booklet from Caterpillar points out that there is a bulldozer blade designed for all track-type Caterpillar tractors. Straight, angling, and U-shaped blades are pictured and described. Job photos show the application of the dozers. The booklet is also available in French, Spanish, and Portuguese editions.

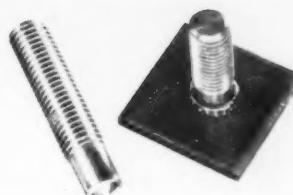
To obtain Form No. DE616 write to the Caterpillar Tractor Co., Peoria, Ill., or use the Request Card at page 18, Circle No. 47.

Tensile strength upped in new end welding stud

■ A new-type threaded end-welding stud is announced by the Nelson Stud Welding Division of Gregory Industries, Inc. The CP granular-fluxed stud has a tensile strength as much as 13 per cent greater than the Nelson MG stud and provides improved welding qualities, the company reports.

The same templates now used with the MG studs can be used with CP studs up to and including the 1/2-inch-diameter size, as the ceramic ferrules used in the welding have identical outside dimensions.

End-welded studs are recommended for use as shear connectors in composite steel-and-concrete bridge and



End-welded studs are recommended as shear connectors in composite steel-and-concrete construction.

building construction and as fasteners in field-assembled, insulated aluminum sandwich walls.

For further information write to the Nelson Stud Welding Division, Gregory Industries, Inc., 2715 Toledo Ave., Lorain, Ohio, or use the Request Card at page 18, Circle No. 158.

Calcium chloride; abrasives

■ A mailing piece, explaining how to mix calcium chloride with abrasives and how to apply the mixture to icy highways and streets, is available from the Calcium Chloride Institute. Brief information is given on the types of abrasives—cinders, sand, granulated stone sand, and slag. Pertinent data is included on the treatment and storage of abrasives. The advantages said to result from the use of calcium chloride and the abrasives are listed.

To obtain the Brief No. IB-1 write to the Calcium Chloride Institute, 909 Ring Bldg., Washington 6, D. C., or use the Request Card that is bound in at page 18 of this issue. Circle No. 162.

CHECK THESE IMPORTANT ADVANTAGES OF McCONNAUGHAY Asphalt Emulsions FOR ROAD-MIX PAVING JOBS

McCONNAUGHAY LICENSEES Operating K. E. McConnaughay Emulsified Asphalt Plants

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2. C. C. Plumb, Elmwood Station
P. O. Box 65, Providence 7, R. I.
3. C. C. Plumb
Portland, Connecticut
4. Albany Asphalt & Aggregates
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7. Knight Paving Products, Inc.
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R. R. #2, Gary, Indiana
19. Bituminous Materials Co.
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20. Bituminous Materials Co.
318 Atlantic St., Bay City, Mich.
21. Emulsions, Inc.
Lawrenceville, Illinois
22. Bituminous Materials & Supply Co.
415 Maple St., West Des Moines, Iowa
Plants:
23. Spirit Lake, Iowa
24. Iowa City, Iowa
25. Menlo, Iowa
26. Emulsified Asphalt Co.
Kuttawa, Kentucky
27. Doherty and Swearingen Co.
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28. Bituminous Materials Co.
Escanaba, Michigan
29. James Huggins & Sons, Inc.
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Eastern Representative:
John A. Dow
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Above—Open-Graded Road Mix, Specification No. 3 . . . Indiana-State Highway; inset—Sand-Mix, Specification No. 8 . . . Guatemala, C.A.

Highly Water-Resistant in ALL Stages

Water and weather are of less concern on road-mix jobs when you use McConnaughay Emulsified Asphalts. Here's why:

These superior emulsions may be mixed with either wet or dry aggregates, but give even better results when no water is added. They are little affected by water or rain during construction or after the paving is completed . . . not susceptible to drainage after mixing . . . have excellent adhesive

qualities . . . assure quick compaction after application. These features mean quicker, easier, better paving.

McConnaughay Licensees (a group of long-experienced contractors, material producers, highway engineers, and manufacturers of equipment) have established enviable reputations for producing the best emulsified asphalt for each type of construction. Fully equipped to take on complete contracts or provide laboratory facilities, emulsions, and technical services required . . . they work with you closely in solving your problems. Take advantage of this exceptional service. If you are figuring on road, street, or general paving, get in touch with your nearest McConnaughay Licensee (list at left) or contact . . .

SPECIFICATIONS OF THESE COLD-MIX PROCESSES AVAILABLE ON REQUEST

- 1—Penetration Macadam, 2—Open-Graded Plant Mix, 3—Open-Graded Road Mix, 4—Dense-Graded Plant Mix, 5—Dense-Graded Road Mix, 6—Mat Coat, 7—Seal Coat, 8—Sand Mix, 9—Sand Honing, 10—Patching, 11—Mastic-Mix, 12—Driveway Construction

K. E. MC CONNAUGHAY
EMULSIFIED ASPHALT PLANTS AND PROCESSES

For more facts, use Reader-Reply Card opposite page 18 and circle No. 244

Winter construction goes with



Tarps cover the engine and cab of a Caterpillar D8, directing heat back to the operator, as material is dozed to a spoil area during work on Iroquois Dam on the St. Lawrence Seaway. This job continues operative this winter.

FASTER COMPACTION at less cost!

COMPACTOR ROLLER SAVES TIME, MONEY ON BIG EARTH-FILL DAM JOB IN ARIZONA

When Fredericksen & Kasler, contractors of Sacramento, Calif., were awarded a Corps of Engineers contract to build the new 9-mile Trilby Wash Detention Basin at Beardsley, Ariz., they used a Southwest 50-ton pneumatic roller to speed up operations and to cut compaction costs.

Construction of the big earth-fill structure—designed to protect nearby Luke Air Force Base from flash floods—started in July, 1955. When the job was finished a year later, about 3,000,000 cubic yards of yellowish-red clay, silt and light caliche had been moved.

Congestion Problem

Physical dimensions of the dams were so limited in cross-section that equipment congestion on the fill threatened to be a serious problem. The dam is only 100 feet wide at its base, 25 feet high, and tops out with a crest width of only 12 feet. The contractors had to move the dirt in fast because earthwork represented nearly 70% of the total contract. An added complication was that specifications required 95% Standard AASHO compaction and moisture at 100% of optimum.

Superiority Recognized

However, the specifications gave recognition to the superiority of the heavy pneumatic roller as a compaction tool. They provided that 12-inch lifts of dirt could be placed at optimum moisture and that either eight passes of a heavy-duty sheepsfoot or only four passes of a 50-ton pneumatic would be satisfactory.

The contractors used a Southwest C-50 for the principal reason that it would handle a normal daily input of 20,000 cubic yards (9 hours) without



Single Southwest C-50 Compaction Roller compacted 6-inch lifts in two passes to meet required 95% Standard AASHO density.

cluttering up the fill. As a speed-up measure the method of dumping was modified so that 6-inch lifts were placed, with the roller making two passes. Because of the full-oscillating feature of the four weight boxes on the C-50, the tires reach down and search out all the uncompacted spots.

Exceeds Required Densities

With 75% of the dirt work in, a life average for the project showed that average densities of 96.1 had been obtained. This was 1½ percentage points higher than had been required.

The C-50 was able to handle 20,000 cubic yards a day—and up to 30,000—with the use of auxiliary equipment for fill leveling. The contractors put the moisture content in the material in the borrow pit by sprinkler irrigation, followed by a week-long period of draining before loading and hauling in material.

Congestion Eliminated

Congestion was eliminated completely. The only compacting equipment on the fill besides the C-50 were two double sets of Southwest sheepsfoot rollers which did not serve in a primary capacity.

Sections 1,000 to 4,000 feet long were worked at one time. Even as the dam crested out at the top, no special concessions had to be given the C-50. It was able to travel just as fast as the hauling units which brought in the dirt. Elimination of the fill congestion problem put



Use of sheepsfoot roller was incidental to building Trilby Wash Detention Basin.



DW-21 towing Southwest C-50 Roller.



Southwest C-50 eliminated congestion problem by handling 20,000-30,000 cubic yards a day.

compaction out in front on a safe, profitable basis.

Southwest Heavy Duty Compaction Rollers can be teamed with all crawler type tractors and nearly all wheel type, off-the-highway tractors. Southwest Rollers range in size from 15 to 100 tons.

Write for complete information.

SOUTHWEST WELDING & MANUFACTURING CO.

Construction Machinery Division

ALHAMBRA, CALIFORNIA

For more facts, use Reader-Reply Card opposite page 18 and circle No. 245

Old man winter's sovereignty over the construction industry is being challenged in the north, east, south, and west again this year, as more and more contractors are planning to keep their firms active during the cold months. These winter jobs will be slightly more costly than summer jobs, but they have advantages that compensate for the extra outlay. Cement shortages are less severe than at other times of the year. Even on cold days, there are plenty of capable men, willing and anxious to work. The problem of supplying them with cool drinking water is minimized. And, most important, men will not slow down on the job because of heat; crews will want to keep working to keep warm.

Following the sun across the continent, we can get a glimpse of some of the more important projects that will be active this winter. The preheating of concrete mixes and the heating of tunnel-tube interiors—techniques picked up during last winter's operations—will be pressed into use again on the \$30 million Baltimore tunnel under the Patapsco River. Not far away, finishing touches will complete the Hampton Roads Tunnel project across Hampton Roads, Va., a job that remained operational throughout the last two winters.

Northeast construction high

Further north, a number of grading projects will be pushed through the cold months, including grading on the Connecticut Turnpike from Greenwich to Killingly. This will allow the contractor to complete paving in the spring so that the road can be opened on schedule in June. Contractors planning work on structures this winter are considering using such items as insulated forms that will prevent bridge-pier pours from freezing, heaters and steam generators for preheating concrete mixes and heating concrete during the curing process.

Some of the vast amount of work going on in the Middle Atlantic states will continue through the cold months. In the New York City area and Long Island, work will be under way on many buildings, including the 38-story Seagrams Park Avenue, a \$20 million project, and the 41-story Union Carbide & Carbon building, a \$40 million job, both in Manhattan.

Impressive projects now under construction by The Port of New York Authority will not shut down with the start of cold weather. The \$100 million Third Tube of the Lincoln Tunnel, the \$85 million Brooklyn-Port Authority pier development program,

CONTRACTORS AND ENGINEERS

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OCTO

es with new equipment and methods

Tunnels, grading, buildings, dams, and bridges are among projects to be continued throughout the nation during the cold weather ahead

the \$60 million Terminal City development at New York Idlewild Airport, and the \$15 million pier development in Newark, N. J., will be under construction throughout the off-season.

Roadbuilding in this section of the country, a great deal of it consisting of grading and stockpiling of materials for next spring, is being led by work on the 120-mile 6-lane expressway being built from the Queens Midtown Tunnel—which links Manhattan and Queens—to Riverhead, Long Island. Winter shut-downs are not planned for the Louisquisset Pike north of Providence, R. I.; the north-south freeway, including the central artery through Boston, Mass.; and the Massachusetts Turnpike. If the November 15 completion date is not met on this last road, work will continue until the 128-mile east-west toll route is ready for use.

Roadwork in the sunny southeast part of the country will continue as usual, spurred by the contractors pushing to completion the largest road project in the south—the Florida Turnpike from Miami to Jacksonville. Other types of construction will also be under way, since winter weather reaching this area is of the mildest.

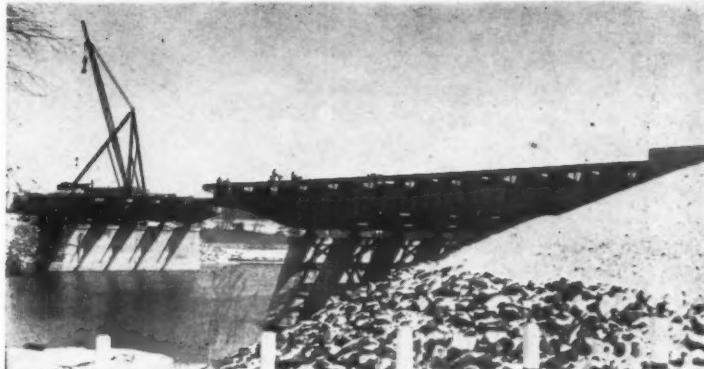
Skipping across the country, there will be work in progress on the 110-mile Northeast extension of the Pennsylvania Turnpike to Wilkes-Barre, and on the \$120 million Olin-Mathieson aluminum plant on the Ohio River near Clarington, Ohio.

Northward on the U. S.-Canadian border, some winter work will be in progress on the St. Lawrence Seaway, though contractors, for the most part, will hold off on concrete work until spring. Two traveling cranes will be placed on the completed Stage 1 portion of Long Sault Dam during the cold months, which will also see completion of the Stage 2 cofferdam. Erection of the steel frame of the Administration and Control Building located over the two ice sluices of the Barnhart Powerhouse on the American shore will be completed during this winter, and the contractor plans to heat aggregates and water so that the concrete floor slabs in the building can be completed before winter ends.

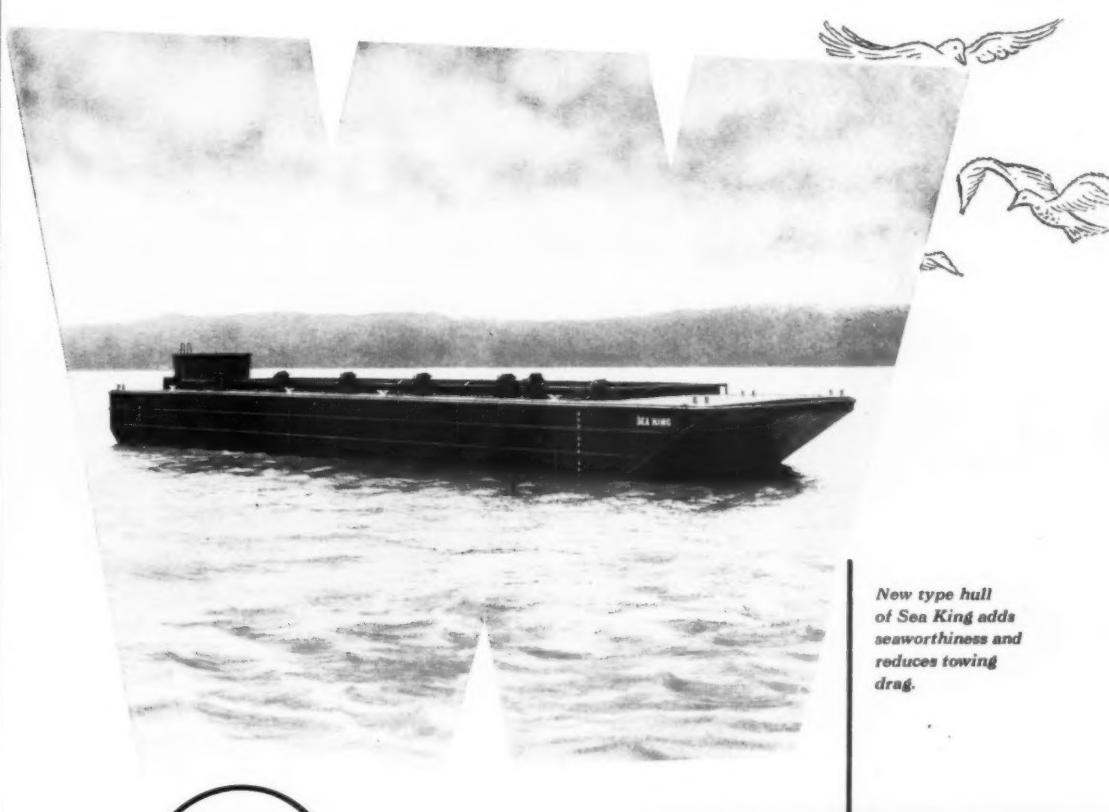
Midwest bridges and roads

With the expanded highway program already starting, most bridge contractors in the central part of the country are planning to work through the winter to complete current jobs and be in a good position to take new work in the spring. This means that bridges will be under construction on

(Continued on next page)



Bridge steel goes into place on a Massachusetts span, despite cold and a recent fall of snow. Such work, together with grading, building construction, and tunneling, ranks high on the list of winter projects scheduled for the northeast.



New type hull of Sea King adds seaworthiness and reduces towing drag.

WILEY...

**for dependable
ENGINEERING &
WORKMANSHIP...**

This 1500-yd. capacity all-steel dump scow was recently delivered to the Henry Du Bois' Sons Co., Inc.

Burton E. O'Brien, President, said that he felt the modern hydraulic system for operating the six pocket doors, as well as the improved towing and seaworthy characteristics of the new type hull, would effect considerable savings in the operating and maintenance costs.

The Sea King will be used in New York Harbor for dredging around piers.



For more facts, use Reader-Reply Card opposite page 18 and circle No. 246

WILEY

MANUFACTURING COMPANY
Port Deposit, Md.

Write for free 38-page illustrated brochure, showing Wiley cranes, barges, tugs, etc., on the job.

(Continued from preceding page)



A contractor on a U. S. Bureau of Reclamation pipeline in the Far West continues pouring concrete on a snowy morning so that small structures can be completed during the cold months.

highways, rural roads, and city streets in many spots.

Though specification limitations as well as economic factors put a stop to both concrete and bituminous paving as well as earthwork when temperatures drop below freezing, some grading is expected to be carried on when time is important to the job. Earthmoving contractors find that frost penetration can be effectively limited by scarifying the surface of the ground, or covering the earth with an insulating material such as straw.

On such grading jobs, tractors are being readied with housings of canvas, plastic, and other materials that will retain the heat from engines and direct it back to the operators, so that

the men can operate open equipment even in low temperatures. Cold-weather starting fluids and special lubricants will be used to get engines running on cold mornings and keep the machines in good working order. Tractors, motor graders, scrapers, and other machines will be equipped with heated cabs on many jobs, both for the comfort of the operator and as a safety precaution against falling objects.

The grading contractors, who for many years have been working rock cuts in the winter, are already rushing to complete the stripping of work areas so that drilling, shooting, and excavation can be done after the freezeup. Such winter rock excavation is particularly important in the development of the huge taconite-processing facilities now being constructed in northern Minnesota.

Many kinds of structural work are slated for winter in the Midwest, with little or no slowdown expected. Most bridge and building contractors here now feel that they must keep their men and equipment working the year round, and they plan on doing winter work when bid prices are figured. Even small bridges—several of them in Minnesota—will be built this winter. A number of bridge jobs will be under way in the Chicago area, where good insulation will protect concrete even at sub-zero readings.

Concrete or steel building construction—no longer unusual in winter—will be just as active in the Midwest as elsewhere. Contractors planning work on schools, air-base facilities, commercial and industrial buildings, and housing projects are well along in assembling winter equipment that will enable work to be carried on during the cold season.

Far West dam work

Past the plains area, some of the nation's most important water-control and conservation facilities will be under construction. Work has been scheduled for Oahe Dam in South Dakota for this winter, and the same is true of so many similar projects that winter construction is likely to be much more active in the West and Far West than at any time since reclamation work was curtailed four years ago.

The Upper Colorado reclamation project, recently authorized by Congress, and preliminary work already under way on Glen Canyon and Flaming Gorge dams should bring construction to a new peak in the Arizona-Utah-Colorado region. Some of the effects of all this work should be felt in the next few months.

In the Pacific Northwest, Puget Sound Power & Light Co. expects to have \$30 million worth of work under way soon on the Upper Baker River. And early fall should see work started on the \$58 million earth dam on Oregon's Lewis River. Bids are already in on the first stage of the \$200 million Rocky Reach Dam on the Columbia River, and by fall, dirt-moving operations should be under way on Priest Rapids Dam.

The Arizona-Utah-Colorado area is also slated to feel the growing pains



OWNER AND OPERATOR AGREE:

Allis-Chalmers HD-16C torque converter tractor works longer, works faster, produces more

Dozing and pulling a scraper in rock-like shale, the HD-16C owned by Murray Construction Co., Waverly, Ohio, is relocating route 73, northwest of Peebles. On one stretch of road, fill being hauled 1200 ft by the 150-hp crawler and a 15-yd scraper will raise highway grade where it crosses a valley.

More Yardage per Dollar

Co-owner Robert Murray has this to say about the new HD-16. "The tractor is a speedy worker and the torque converter is one of the reasons. We also find we haul more yardage for each dollar spent. And the time saved in not greasing track rollers daily should increase our profits."

Operator Kenneth Austin added this: "Our former tractor would stall loading rock like this, but the '16' goes right through. The torque converter saves clutching and makes it a lot easier for me. At the end of a day's work I'm not nearly as tired."

Saves Half Hour Greasing Time Daily

"I get more production because I put in an extra half hour a day hauling and dozing instead of greasing track rollers. I can haul and dump three 15-yd loads in that time and that amounts to 225 yd of extra pay load every week."

★ ★ ★

An HD-16 gives you more power for bigger jobs... plus more effective use of power, with a brand new Allis-Chalmers diesel engine and your choice of two great drives—the job-proved torque converter or the easy-shift standard transmission. But that's not all—you get many more advanced basic design features such as all-steel, box-A main frame and one-piece steering clutch and final drive case... unit construction... and timesaving, simplified lubrication and service designed with better maintenance in mind.

All in all, an Allis-Chalmers HD-16 brings you a top combination of performance and long life with mounted or drawn equipment... a higher rate of production, more working time, lower job costs.

ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

Talk to your Construction Machinery Dealer today

ALLIS-CHALMERS



For more facts, use Reader-Reply Card opposite page 18 and circle No. 247

that will accompany the new highway-construction program. Highway work in the rough terrain characteristic of this section of the West will call for heavy grading, modern paving methods, and the use of astronomical quantities of crushed-rock base. Intermountain area contractors are expected to push such work as clearing, excavation, rock work, and rock crushing through the cold-weather months when the temperatures in this section hover between cold and moderate. Highway work, already bulking large in the Pacific Northwest states, will get even larger in the months to come. Washington already has one of the biggest construction programs in history under way, and this program will be expanded when federal funds are available under the new road law. Oregon's well planned road program is all ready to start rolling as soon as federal money can be put to use.

Building construction in western states is expected to increase rather than slacken in the near future. Seattle needs office buildings badly, and for this reason, such work should be extended throughout the winter. Building contractors in California, Oregon, and Washington will be pressed hard to keep up with newly authorized school projects in these states.

Work on gas-transmission lines will not stop because of cold, either. Giving impetus to these jobs is the record of 1955-56, when firms pushed pipeline work through the winter months and showed a profit.

Work being prepared, work being planned, work in the bidding stage all over the country shows that this winter will be one of the most important for contractors and for the construction industry. And if cold weather means problems on a job, it means opportunities, too. Using new equipment and improved methods, contractors are making winter work not only possible, but also, economical and profitable.

THE END

Spreader; seeder

■ Finn Equipment's mulch spreader, Hydro-Seeder, and Klobuster are described in a bulletin from the company. Job photos point out that the units are able to do various roadside maintenance operations. According to the bulletin, the spreader mixes mulch and adhesive and sprays it to hold top soil in place, regardless of wind, rain, and traffic. It can also be used to spray insecticides on trees and shrubs. An action shot of the Klobuster shows it dressing and scarifying slopes, and spreading topsoil on slopes from 3 to 1 and steeper. Data is also given on the Hydro Seeder.

To obtain Bulletin 4-56 write to the Finn Equipment Co., 2525 Duck Creek Road, Cincinnati 8, Ohio, or use the card at page 18. Circle No. 52.

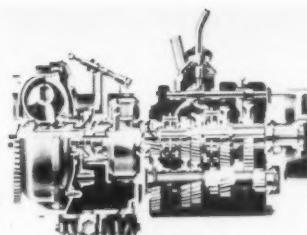
The Shovel appoints

Wilson H. Madden has joined the The Shovel Co., Lorain, Ohio, as merchandising methods manager. He was formerly with the "Quick-Way" Truck Shovel Co., Denver, Colo.

Power train for stop-go, off-highway operations

■ A new power train developed by the Clark Equipment Co., consists of a torque converter, a hydraulic-disconnect clutch, and a standard transmission, all in one unit ready for mounting with any standard-make engine. Because of the TransVerter's compactness—only 8 inches longer than a conventional transmission and clutch—it can be installed without a major redesign of the engine, the company points out.

Recommended for off-highway and stop-go operations, the TransVerter is rated at 325 foot-pounds of engine torque output. Advantages claimed for the power train include: elimination of engine stalling and lugging;



Clark's TransVerter power train has an engine torque output rating of 325 foot-pounds.

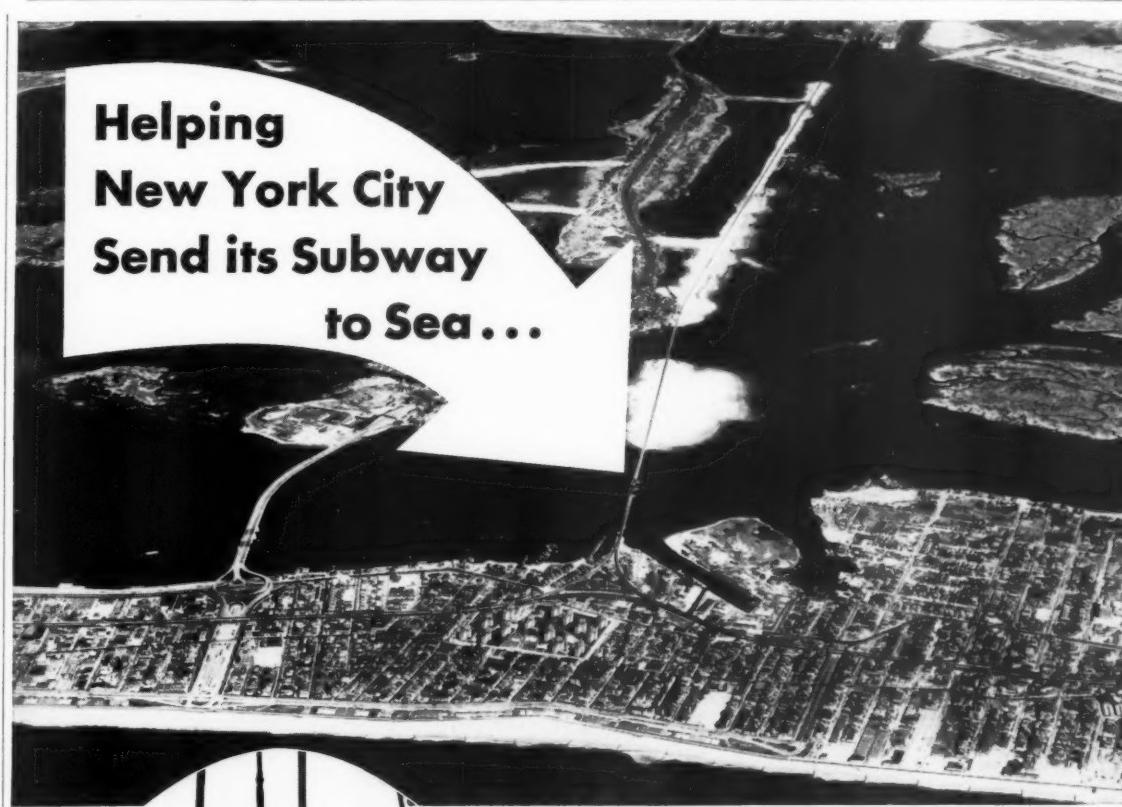
sharp reduction of gear shifting to a point where most work can be performed in the same gear; and fine inching control through manipulation of the throttle.

The converter is a single-stage, 3-element type with a 2.57:1 maximum

torque multiplication ratio. It is equipped with an over-running clutch in the stator so that the converter acts as a hydraulic coupling under light load conditions.

The hydraulic-disconnect clutch is of the multi-disk type. When hydraulic pressure is applied to the clutch, a piston forces the two sets of plates together, in effect coupling the converter output shaft to the main drive gear of the transmission. When pressure is released, the plates separate, immediately disconnecting the engine drive from the transmission.

For further information write to the Transmission Division, Clark Equipment Co., 1300 Falaehee Road, Jackson, Mich., or use the Request Card that is bound in at page 18. Circle No. 11.



with McKERNAN-TERRY Pile Hammers

The construction of the 11½-mile extension of New York City's subway system to Rockaway, Long Island, involved building a 4-mile causeway and trestle with bridges over the ship channels in Jamaica Bay.

The concrete trestle rests on bents comprised of 900 precast reinforced concrete piles, 24-in. square with lengths ranging from 40 to 70 ft. For driving the piles, the contractor, Merritt-Chapman & Scott, used a McKernan-Terry S10 Single-Acting Pile Hammer on a barge crane, as shown in the illustration to the left. A McKernan-Terry S5 Single-Acting Hammer and a McKernan-Terry 10B3 Double-Acting Hammer operated from floating rigs were also used to drive 4,100 timber piles for the approach and bridge piers, fender system and cofferdams.

The efficient work of the contractor enabled this project to be completed ahead of time, a record helped by the performance of the McKernan-Terry Pile Hammers. Write for bulletins describing these effective machines in detail.

**McKERNAN-TERRY CORPORATION
MANUFACTURING ENGINEERS**
82 Richards Ave., Dover, N. J.

HX345

For more facts, use Reader-Reply Card opposite page 18 and circle No. 248

Big baseball stadium project held to schedule, despite winter

Gas salamanders and enclosures permit completion of steel and concrete structure in time for opening game

by RALPH MONSON, field editor

"Play ball!"

The words that started action in the first home game of the Minneapolis Millers' baseball season on April 24 also meant fins for an important phase of construction on the Bloomington Stadium of the Metropolitan Sports Area Commission, just outside Minneapolis, Minn. Work started on the structure late in September, 1955, and continued through six cold months of an unusually severe winter so that the stadium would be ready for the 8,360 fans who braved the early-season weather to watch the opener. Two weeks afterward, 4,000 additional seats were ready for use.

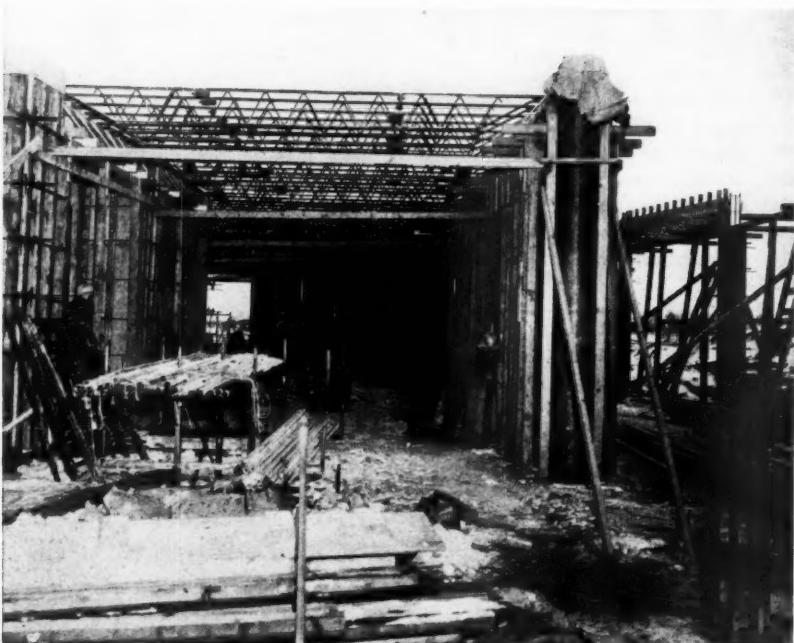
Though below-freezing weather was usual, below-zero readings were not uncommon during most of the construction period. Snow covered the ground most of the time, and a fire destroyed or damaged part of the structure and some equipment during the middle of the winter, but the job remained on schedule.

Cantilever steel decks

Expected to be one of the finest baseball parks in the country, providing accommodations even for a major league baseball team, the park's initial section is a fan-shaped structure extending around the diamond from first to third base. Tangential extensions along the foul lines will be built later. The combined steel and concrete structure, completed earlier this year, rises 89 feet above the basement floor—the height of a seven-story building—and provides seating for about 15,000 spectators in three decks. All the decks and the intermediate floors of the supporting structure are reached by means of ramps at the rear.

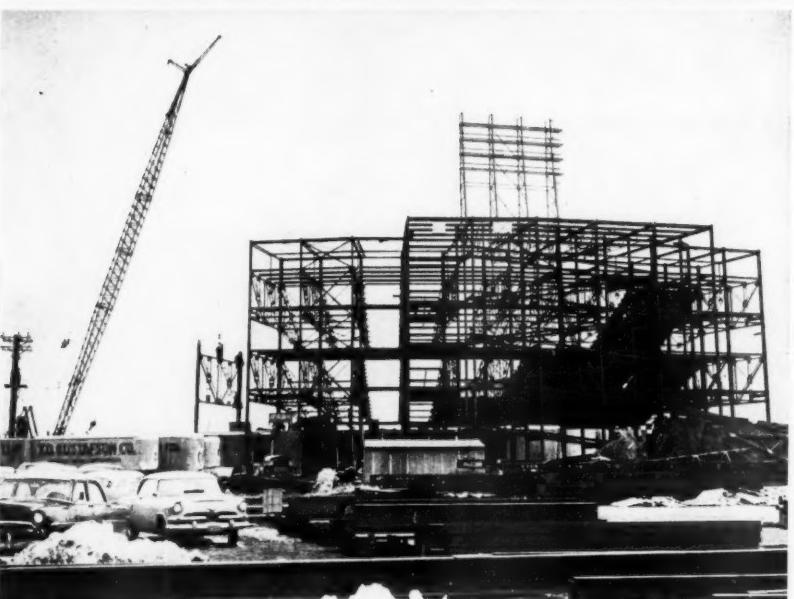
The lower deck, with 40 rows of seats, is of reinforced concrete. It is fully enclosed and contains such facilities as dressing rooms, club rooms, and concession areas.

The middle and upper decks, with 17 and 11 rows of seats, respectively, are of structural steel construction. Long cantilever trusses carry the seating on these decks so that posts are eliminated and spectators have a clear and unobstructed view of the pear-shaped playing field. The field



Basement and ground floor levels finished, crews frame part of the curving first level above ground. Column forms of $\frac{3}{4}$ -inch plywood tied with Kardong column clamps, and round columns formed with Sono-tubes, support adjustable steel joists.

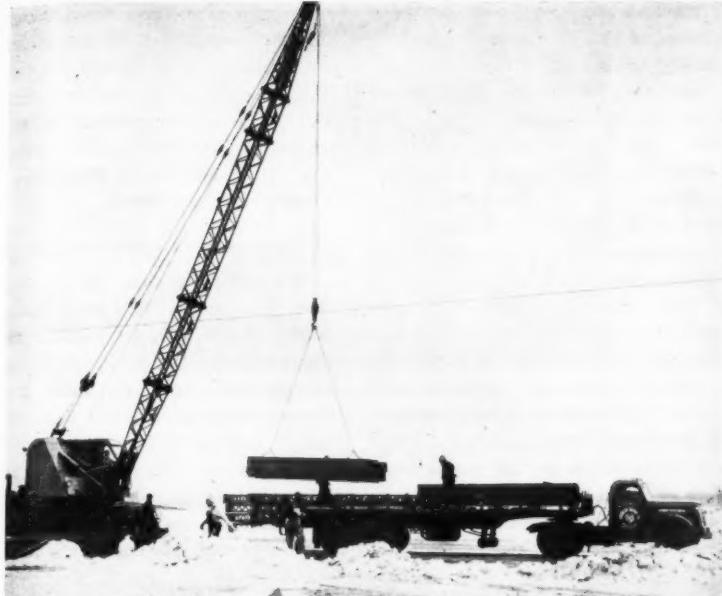
C&E Staff Photos



One of the trusses for the superstructure is set by a Manitowoc 3000 with 140-foot boom and 17-foot jib. The high tower on top of the curving framework, 138 feet above the playing field, is for floodlights.



Reaching across the first level of decking, a Lorain 30-ton Moto Crane delivers a panel of decking to the middle tier. While the upper steel decks are being erected, workmen install seats on the lower deck.



A Browning truck-crane unloads structural steel for the two upper levels from a semi-trailer pulled by a GMC truck. The steel is stockpiled in the finished parking area, which has been cleared of snow.

itself is surrounded by a 20-foot cinder track, bounded by an 8-foot woven wire outfield fence. Foul posts at right and left field are 316 feet from home plate, while in the center, the distance bows out to 405 feet.

The structure was designed by two Twin City architectural and engineering firms, Thorshov & Cerny, Inc., Minneapolis, and Toltz, King, Duvall, Anderson & Associates, Inc., St. Paul, and construction was split into six prime contracts, all of which were handled by Minneapolis firms.

Johnson, Drake & Piper, Inc., was the general contractor. Electrical and mechanical contracts were held by Sterling Electric Co., and T. D. Gustafson Co., respectively. A separate contract for drilling a water well was

awarded to Bergerson-Caswell, Inc., and the seating was supplied by Minneapolis School Supply Co.

Site grading

The sixth contract—for site grading and preparation—was awarded to Kimmes Construction Co., Hastings, Minn. This was the only work not done during the winter. It was completed between June and November, 1955, while engineers were preparing the construction plans and contract documents for the structural work.

The 450,000 cubic yards of earth excavation was handled by a spread of Allis-Chalmers equipment, which included six scrapers—two TS-200's, a TS-300, a TS-360, and two tractor-drawn units pulled by HD-19 and

HD-21 tractors. Allis-Chalmers HD-20 and HD-21 push tractors worked with the scrapers on the loading cycles, while an HD-15 tractor-dozer and an AD-40 motor grader spread and shaped the fills.

Compaction of the subgrade was particularly important in the roadways, parking areas, and the playing field. In these areas, fills were laid down in thin layers and thoroughly compacted to a minimum density of 98 per cent Modified Proctor. Compaction was obtained by a tandem arrangement of a Hyster grid roller and a Tampo 25-ton pneumatic roller, which were pulled by an Allis-Chalmers HD-20 tractor.

Approximately 200,000 square yards of 4-inch stabilized base-produced

by a Cedarapids Commander plant in a pit about nine miles from the job site—was placed in the roadways and parking areas. Two Allis-Chalmers HD-16 tractor-dozers fed the plant and a fleet of 20 Ford and International tandem-axle trucks with 8-yard dump boxes hauled the material to the job.

Water trucks sprinkled the gravel, bringing it to optimum moisture content, while two Galion and two Allis-Chalmers AD-40 motor graders took over the processing and laying operations. Compaction of the base material was provided by six Tampo 13-wheel rollers.

Bituminous surfacing was sublet to the Bituminous Surface Treatment Co., Invergrove, Minn., and sodding

With construction of the Bloomington Stadium near Minneapolis, Minn., in its final stages, workmen install seats on the lower, middle, and upper decks, to make the facility ready for the opener. The entire job was done in the cold months between late September, 1955, and early spring.





Cold and snow arrived even before the substructures of the stadium were completed. Here, snow has been cleared away and heavily clad workmen are enclosing the entire area with a canvas housing heated by salamanders.

C&E Staff Photos

was done by Ray Jordan & Sons, Inc., Minneapolis. Drainage and sewer work, included in the site-preparation contract was sublet to William D. Terry Excavating Co., Inc., Minneapolis.

Excavation

Excavation for the structure, included in the general contract, was sublet to J. A. Danens & Son, Minneapolis. Two Marion draglines, a 41-M and a smaller model, did most of the digging, with assistance from a Caterpillar D6 tractor with a Traxcavator front-end bucket. In areas where compaction of the subgrade and backfills was important, Danens used a Vibro-Plus vibrating roller pulled by the Cat D6. This small roller got into the places between the columns and did an effective job of compacting the sandy material.

Portions of the excavation were from 2 to 7 feet below ground-water level and had to be wellpointed during some of the construction period. This operation was handled by Lametti & Lametti, South St. Paul, which used a Griffin wellpoint system. Some of the dewatering equipment, in use over a two-month period, was still operating after the cold of late fall had set in.

Canvas housings

Almost as soon as concrete construction started, winter blanketed this section of the country with cold. From this time on, practically every yard of the 8,500 cubic yards of concrete in the structure was placed under winter conditions. Johnson gas salamanders supplied heat inside canvas enclosures while footings and basement structures were poured. Rated at 60,000 Btu per hour, each of the heaters was connected to a separate LP gas container. During the peak of construction, more than 100 of these units, furnished and serviced by Allied Gas Co., Hopkins, Minn., were in operation at one time.

The basement walls, tunnels from dressing rooms to dugouts, and other flat surfaces were formed with Waco steel and plywood form panels. Most of the columns were formed with $\frac{3}{4}$ -inch plywood backed by 2×4 's and tied with Kardong column clamps. A few round columns were formed with 18-inch Sonotubes.

Concrete for these pours was delivered in transit mixers from Allied Ready-Mix, Inc. and Quality Service Concrete Co., both of Minneapolis, and was either chuted directly from the trucks or placed by a Marion 41-M crane and bucket. The crane, equipped with a 70-foot boom and 20 feet of jib, handled an Insley 1-yard laydown bucket and Gar-Bro 1-yard bottom-dump buckets.

Flat slabs were formed by two methods. About 60 per cent of the flat floors were formed with plywood forms supported on Adjustable steel joists. This forming, done by Adjustable Joist Co., Minneapolis, had a row of shores set under the beams along the edges of the slabs. These shores supported the beam forms and carried the steel joists, leaving the space

between column rows entirely clear in one direction. This was particularly convenient in a structure of this type.

The slab floors on the upper decks were of Cofar construction furnished by Granco Steel Products Co., Granite City, Ill., and placed by Waylander & Petersen of Minneapolis.

Sloping decks poured on pans

The sloping portion of the lower deck was formed with wood shores, beam forms, and joist bearers. The risers and treads for the steps supporting the seats and aisles were formed with special steel pans furnished and set by L. A. Pinner Steel Forms, Dallas, Texas, a firm specializing in stadium construction.

Placing the concrete on the wide sloping section was one of the major

This network of ramps, takeoffs and highway way composes the three mile stretch of New Jersey Turnpike extension worked by Geo. M. Brewster & Son, Inc.

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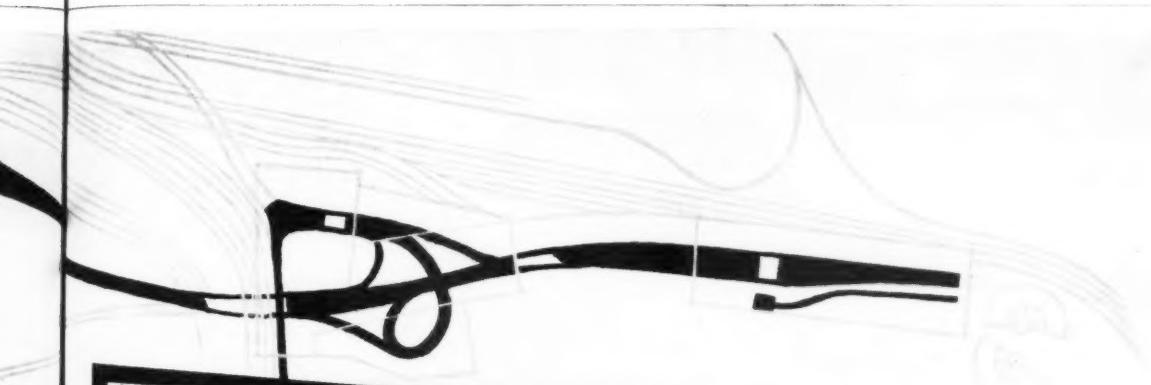


Inside the enclosures, more than 100 heaters like these Johnson gas salamanders were in use at the peak of construction, permitting brick work, plastering, and other finishing operations to continue, regardless of the temperature outside.



Cold, snow, and frozen ground complicate the already difficult job of forming the sloping first deck of seats. Steel pans over these wood forms will complete the deck form. LP gas tanks, foreground, supply heaters inside the structure.

wide
major



Byron Craig, Paving Superintendent, shows type of progress chart he used to map pours.



Typical slab section. Note unusual tapering. Brewster was able to maintain above average pour with a single Flex-Plane machine without a spreader.

Here machine works narrow take off strip in contracted position. Three mile stretch had 10 such strips plus 8 ramps and one underpass.



For more facts, use Reader-Reply Card opposite page 18 and circle No. 249

construction problems. The lower half was placed with the crane and buckets, but the crane could not reach the upper half. For this pour, Johnson, Drake & Piper devised a rolling scaffold that enabled the crew on this work to place concrete at a rate of up to 250 cubic yards per day. Framed of Waco scaffolding, the device rested on three sets of wheels which traveled on rails on the form pans. The framework was about a foot high at the upper end and 9 feet high at the lower end and the platform measured about 10 x 20 feet.

The Marion 41-M crane bucketed the concrete to a Gar-Bro 2-yard hopper that was used to fill hand-powered buggies. The buggies, wheeled to the rolling scaffold, dumped their contents over the edge of the platform. A series of baffles and strike-offs directed the concrete into place and struck it off at the proper level on the several risers. In a single pass, this rig placed concrete on 16 risers that averaged about 2.5 feet in width.

Placing this concrete in good weather would have involved plenty of problems, and placing it in temperatures ranging from freezing down to zero only added another problem—that of keeping the concrete warm.

Before a deck pour began, the space under the forms was completely enclosed and heated by the gas salamanders. Heated concrete containing 0.5 to 1.0 per cent calcium chloride was delivered at temperatures between 75 and 80 degrees and poured out in the open, even when temperatures approached zero. Within 30 minutes after concrete had been placed, it was given a wood float finish and covered with Sisalkraft curing paper. The thin sections, 3-inch treads and 5-inch risers, absorbed enough heat from below so that, with only this paper for protection, the concrete did not freeze even at the surface.

Plastic enclosure

On the flat portion of the concrete deck, an enclosure was built both to house the workmen and protect the concrete. The framework of the enclosure consisted of Waco scaffolding with 2 x 6 joists spanning between the scaffold towers. The top of the enclosure was covered with canvas,



As soon as the basement had been completely enclosed and heated, warm concrete was placed for the floors. The finishing operation here is being done by a Master power finishing machine.

C&E Staff Photos

(Continued from preceding page)

which was opened to permit concrete to be placed by the crane-and-bucket method. The sides of the enclosure were covered with transparent Visqueen transparent plastic sheets, attached with battens, which made it unnecessary for artificial light to be used during the daylight hours.

Workmen had to cope with two other problems in concrete placing that were aggravated by the cold weather. One was the settlement of shores and mud sills. These frequently had to be placed on frozen ground at the start. Then, as heat was applied during construction, the ground under the shores thawed and the footing blocks settled slightly. To combat this, extra workmen constantly checked

the wedges under the shoring, tightening them if necessary, before and during all concrete pours.

The second big problem for concrete crews involved removing all frost from ground on which concrete was being placed. This was particularly important in the basement floors, where the frost sometimes penetrated to a depth of 3 feet or more. Water was found to be the most effective means of removing the frost from the sandy subsoil underlying the structure. Water from the well, with a temperature of about 50 degrees, was run onto the frozen ground, and as the frost drew out, the water penetrated until it was lost in the ground.

Steel erection

The furnishing and erection of 1,750 tons of structural steel, sublet to the Minneapolis branch of the American Bridge Division of U. S. Steel, was, in turn, let to Industrial Construction Co., Minneapolis. This firm set all the steel from the ground level around the outside of the stadium with a Manitowoc 3000 crane with 140 feet of boom and 17 feet of jib.

Each bay of the tower section at the rear of the stadium was set first. Then the big cantilever trusses, which carry the seating, were hung in place. Although the individual lifts were not extremely heavy, the long reaches taxed the capacity of the crane.

A Browning truck-crane unloaded trucks delivering the steel to the site and carried the individual members to within reach of the Manitowoc. At this time, the prepared parking area around the stadium made an ideal storage yard for the steel. Whenever necessary, snow was plowed off, making a great deal of space available for the members.

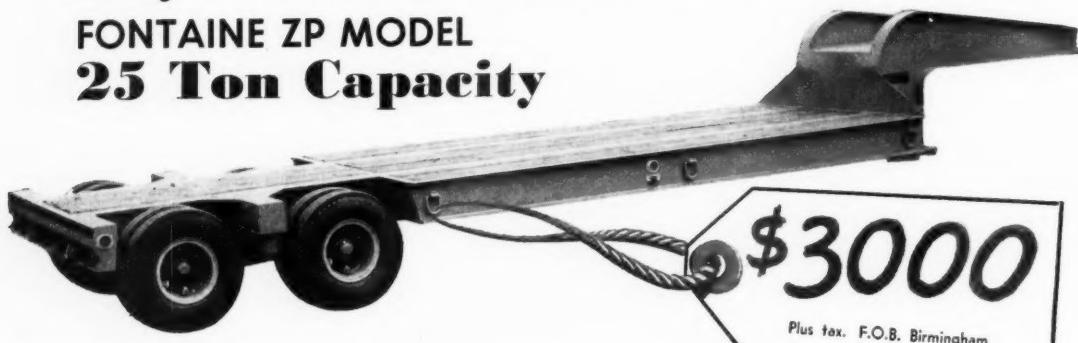
The cantilever portions of the middle and upper decks are decked over with specially shaped steel panels that attach directly to the steel framework. These lightweight sections help reduce the dead load on the cantilevers. The tower portions are floored with Cofar steel decking covered with concrete. The steel decking was set by a Lorain motor crane with a long boom. Standing at the edge of the playing field in front of the stadium, the crane reached the steel panels over the long concrete deck and up into place on the higher decks.

Bolt seats to decking

While steel and concrete work were continuing on the two upper levels of the stadium, seats were being installed in the lower deck by American Seating Co., Grand Rapids, Mich., working under a subcontract from Minneapolis School Supply Co.

The seats were bolted directly to the decking, the installation crews drilling holes in the concrete of the lower deck with Syntron electric hammers and star drills before placing expansion anchors to attach the seats. This method of installing the many bolts needed was considered simpler and more economical than attempting to place them in the forms

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Instead of installing anchor bolts in the forms while concrete was being placed, the contractor found it simpler to drill holes in the finished concrete deck with a Syntron electric hammer, then install the bolts for the chair-type seats.

when concrete was poured.

The steel decking in the upper two decks was predrilled to receive the bolts for the chair-type seats. Seat stud bolts were electrically welded to steel riser plates on the middle and upper decks. Practical to maintain and attractive in blue and two shades of green, the seats attach to the riser leaving the tread beneath unobstructed for cleaning purposes.

Fire damages concrete

In spite of the difficulties of doing concrete and steel erection in cold weather, the job stayed on schedule throughout the winter months. The last section of the concrete deck was placed on schedule on Friday, February 24, 1956, and workmen and supervisors left the job that day with a great deal of satisfaction. But at 2:30 Sunday afternoon, a gas explosion started a fire in a newly placed area, and the flames raced through nine bays, injuring two watchmen on duty, damaging some concrete, and destroying other sections of concrete as well as a substantial amount of form lumber, tarpaulins, form pans, salamanders, and other supplies and equipment. Part of the structure that was untouched by fire was damaged by smoke and required a big cleanup job.

The losses were covered by insurance, but the delay was serious in view of the tight working schedule for this job. Despite even this setback, work on the remainder of the stadium continued without interruption and the damaged sections were replaced in time for the job to meet its deadline.

Winter work successful

Steel erection, seat installation, and some other operations continued through the cold weather, in addition to concrete construction. Although some time may have been lost because heavy clothing slowed down the men and because crew members had to warm their hands and faces at times, the amount of time lost was not noticeable in the long run.

Noteworthy is the fact that, in some ways, the project resembled that of a summer job. There was no greater turnover of workmen on this job than is usually experienced in more favorable weather. Nor was there an unusual amount of complaints by the

workmen. They came dressed for work in the cold and did their jobs in the usual way.

Even the construction schedule for the stadium was approximately the same as it would have been if the job had been done during the summer, though some extra time and labor was required for such jobs as building enclosures, heating concrete, and removing snow. Though this extra work undoubtedly added to the over-all cost of the job, the additional expenditure was justified. Delaying the start of the work until spring would have meant that the stadium would not be available during most of the baseball season. The revenue made by the stadium this past summer more than paid for the additional cost of getting the facility ready for

an April opening.

Superintendent of the job for Johnson, Drake & Piper, Inc., was A. L. Hayes. Supervision of the site-grading contract was handled by C. H. Bartelma, a partner in Kimmes Construction Co. Supervising resident engineer for the architects and engineers was Idris V. Jones, a veteran in the stadium-construction field who supervised a number of similar structures, including the big Milwaukee County Stadium at Milwaukee, Wis.

THE END

Blaw-Knox appointment

The Construction Equipment Division of Blaw-Knox Co., Mattoon, Ill., has appointed Walter R. Hazard to its sales staff in New York, N. Y.



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When plows have cleared the Thruway pavement, a Galion grader pushes snow away from the outside lane.

Radio directs snow fight on New York Thruway

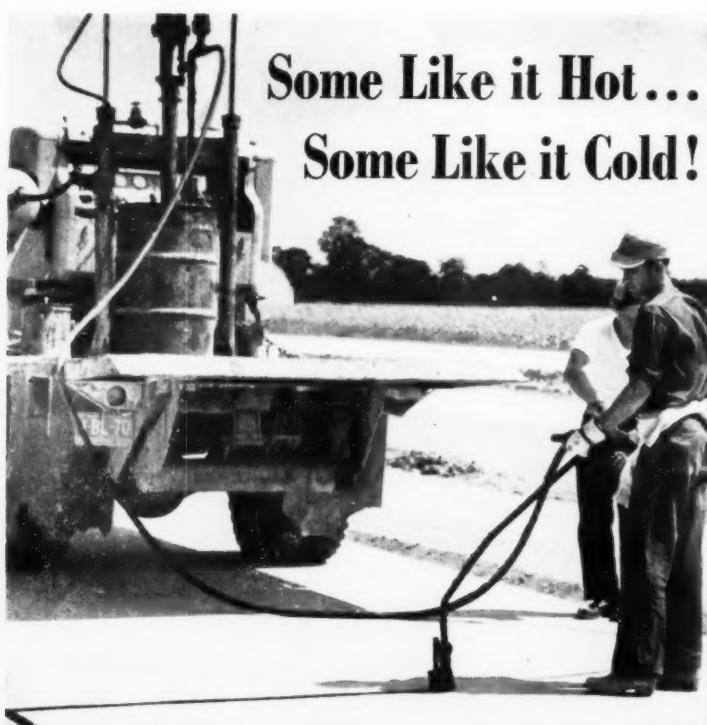
by ANTHONY N. MAVROUDIS, field editor

Winter maintenance procedures on the world's longest toll road—the 427-mile New York State Thruway—depend for coordination on a radio, telephone, and teletype communications network that stretches from Buffalo to New York City. When adjoining sections of the high-speed highway are completed, the Bureau of Maintenance of the Thruway Authority will use these nerve centers to keep a total of 562 miles of road opened at all times.

Keeping the road clear becomes

most crucial at this time of year, for winter weather varies a great deal in different sections of the state. In any wintertime emergency, the bureau relies on the 48 base stations and 475 mobile radio units and the telephone and teletype communications that tie all maintenance operations together. This equipment has been installed on the Thruway by the New York Telephone Co., which is also responsible for 24-hour maintenance on all communications equipment.

All snow-removal equipment is sup-



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In "Communications", at New York Thruway headquarters, messages of the four divisions are monitored by G-E sets and information is posted on the magnetic map of the road by markers. All transmissions are recorded by the machine at extreme right. Next to it are four telephone-answering devices that supply the public with information on driving conditions.

Radio, telephone, and teletype network coordinates division and section equipment during severe storms



plied with General Electric mobile sets, as are administrative cars, police cars, and emergency service vehicles. All toll booths, the 13 maintenance buildings, and the four division headquarters are equipped with radio.

The radio system, a combination of land telephone lines and radio, is divided into four networks for the Thruway's four divisions—New York, Albany, Syracuse, and Buffalo. The New York Division radio area extends from Yonkers to New Paltz, the Albany Division radio from New Paltz to

Fort Plain, the Syracuse Division radio from Fort Plain to Victor, and the Buffalo Division radio from Victor to Buffalo. Each of the four networks is operated independently, but each unit can hear all transmissions.

Transmissions monitored

All division messages are monitored round-the-clock by a setup designated "Communications" at the Thruway headquarters in Elsmere, near Albany. Four communications clerks

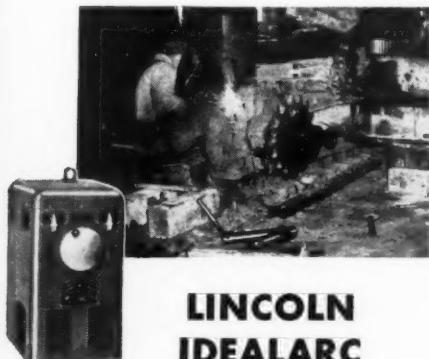
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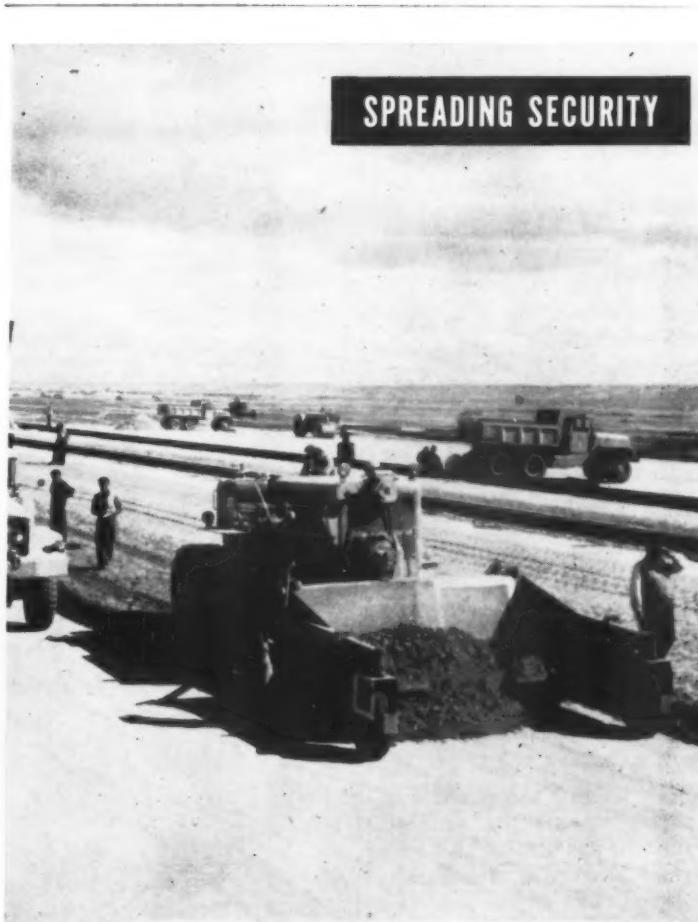
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An Adams Traveloader, riding the shoulder of the road, loads snow into a GMC dump truck after a storm. The truck is also equipped with a right-wing attachment for plowing.

and one supervisor handle this setup, which uses four General Electric transmitter-receivers.

One of the most important functions of "Communications" is the notification of administrative personnel of emergency conditions on the superhighway. Keeping tabs on all road and weather conditions and on the location of service personnel is simplified by a large magnetic control map of the entire Thruway, on which all this information is posted.

The equipment at "Communications" allows any two, three, or four divisions to be tied together for direct point-to-point contact. This is an innovation that is extremely important during snow-fighting operations, since it allows "Communications" to transmit to all the divisions at one time and to coordinate the movement of equipment and personnel. Messages that are not of an emergency nature are usually passed between divisions by "Communications".

Weather information

Weather forecasts, obtained from the U. S. Weather Bureau and from a private concern, the Northeast Weather Service, Boston, Mass., are teletyped directly to "Communications" and to all division headquarters. Weather information is posted on the main control map at "Communications" that shows conditions prevailing at the moment along the entire Thruway.

The weather information posted on the map is not only used by the maintenance forces of the Thruway, but is also disseminated to the public by means of telephone recordings. This has become one of the more popular public services provided by the Thruway.

At present, four automatic telephone-answering services are in use in the Elsmere headquarters and two in the Syracuse division headquarters. Simply by picking up a phone and calling ALbany 5-3393 in the Albany area and SYracuse 7-38401 in the Syracuse area, motorists can get the latest information on driving conditions along the entire length of the Thruway. These devices have handled as many as 13,000 calls in a single week, and this number may go even higher if similar devices are installed

in the New York and Buffalo divisions.

During winter, when there is a great demand for the service, weather information arriving at the Elsmere headquarters is recorded on the Thruway master-control map as it is received; then it is recorded for telephone transmission. The outgoing message is revised whenever necessary. The old message is automatically "erased" from the recording device every time a new message is recorded. As soon as a message is complete, the devices are switched to transmit over the telephone lines.

The same message fed to the answering devices is also teletyped to all divisions; the information is precisely the same, regardless of the division called.

Division operations

Divisions operate much the same as headquarters—but on a smaller scale. Each division headquarters is equipped with a transmitter-receiver, operated and controlled by a state police dispatcher. The communications room at each division headquarters has a magnetic map of the route of the Thruway under its jurisdiction. The communications clerk at division headquarters, monitoring all transmissions within the division, uses varied markers to post weather conditions, accidents, or unusual occurrences along the stretch.

Information on accidents and weather conditions is relayed to division headquarters via radio by state police patrolling the Thruway. When the message is picked up at division

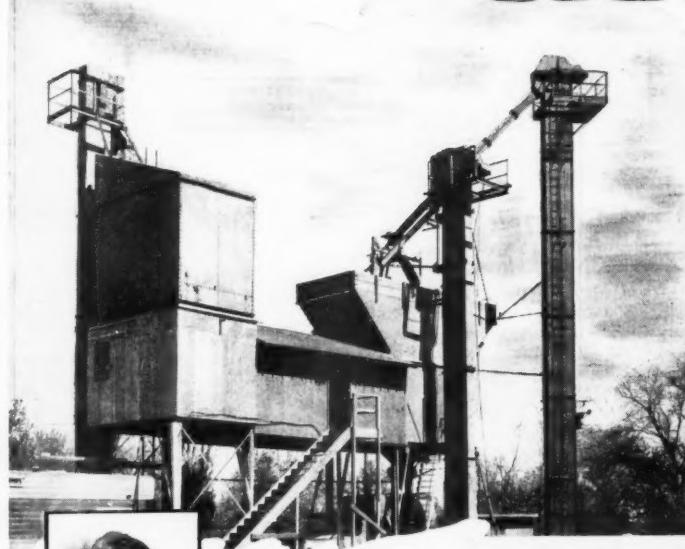


Conrad G. Seebolt, vice president of Seebolt, Inc., South River and Red Bank, says, "We specified a second Hiltzel plant on the strength of performance of our first. I feel re-ordering to be the strongest kind of recommendation!"

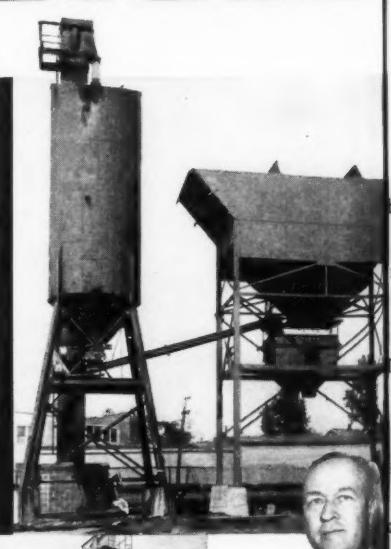


Tony Stecher, secretary-treasurer Mutual Contracting Co., Balmat—"From the performance of our first—we have just purchased our second Hiltzel plant—and when it comes time for the third—that, too, would be all Hiltzel."

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Mr. Walter Cortier, owner, Allied Transit Mix Concrete, Freehold—"We are thoroughly satisfied with the Hiltzel plant! We wish to further state that recently a nationally known firm of consulting engineers made a plant survey and reported that it is one of the best layed out plants they surveyed in the last few years."



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Ted Farrell, manager Monmouth Lumber and Concrete, Deal—"We operate other makes, but this new Hiltzel has them all beat for speed and accuracy. We are Batchmaster® boosters from now on."



headquarters, the information, if sufficiently important, is posted to the control map.

Division sections

The four divisions are broken down into sections about 30 miles in length. The present 15 sections along the thruway will be increased as soon as the New England, Niagara, Erie, Berkshire, and New Jersey extensions of the road are completed.

Section buildings have radio equipment connected to the division headquarters by wire land lines. The advantage of these land lines for interconnecting the system is that, if the lines are damaged, the thruway radio can be easily re-routed through other parts of the state on existing telephone lines. Short-wave radio



A Sicard rotary snow plow follows the grader, removing a 7-foot swath of snow from the edge of the pavement. Snow removed this required distance is blown onto the side slopes and allowed to melt.

links the fixed stations at interchanges and maintenance buildings with the mobile units.

Each division maintains a large reserve fleet of snow-removal equipment that is used, at the discretion of the Division Engineer, to supplement the machinery of one or more of the sections. Each section, however, is assigned its own equipment and is responsible for maintenance and snow removal in its particular stretch.

Basically, section equipment rosters are the same, but in the Mohawk Valley area between Buffalo and Amsterdam, where weather is very unpredictable, sections generally carry additional heavy-duty snow fighting equipment.

Work during storms

When snow is forecast, the particular sections most likely to be hit begin moving out their equipment immediately. If a warning is sent out during regular working hours, personnel remain on the job after hours. Before snow begins to fall, Hi-Way spreaders distribute salt on the roadways to prevent snow from sticking to the pavement.

In the event a storm strikes unexpectedly after working hours, section supervisors call up their men and have them report to the maintenance building for their equipment. If snow has already fallen or icy conditions exist, the spreaders move out to distribute a mixture of sand and salt on the road.

All or part of the equipment assigned to a section headquarters may be operating at one time, depending on the size of the storm.

A typical roster of equipment working out of a section headquarters includes a Ford 2-ton stake truck with Wausau plow, three Ford 2-ton dump trucks with Wausau plows, six GMC 5-ton dump trucks, three with one-way plows and three with one-way and wing plows. An FWD 7-ton dump truck with rollover plow, three Hi-Way abrasive spreaders, three Tarant Scotchman chemical spreaders, three Flink sand spreaders, and two tractor snow plows round out the list.

The high-speed reversible plows, capable of plowing and spreading salt and sand, can operate at a speed of 35 to 40 mph as they remove snow from the roadway. Generally, three plows with wing attachments are used in clearing the complete width of a roadway in one pass. The lead plow, equipped with a left-wing attachment, rides on the inside lane as it pushes snow onto the median strip. At the rear of this plow is a sign saying "Pass on Right". The second plow, having a right-wing attachment, works about 700 feet to the rear, riding along the centerline of the roadway as it pushes snow to the right edge of the outside lane. At the rear of this plow is a sign reading "Pass on Left". The last plow, also equipped with a right-wing attachment, pushes snow off the outside lane and onto the shoulder of the road as it operates 700 feet behind the second plow. The last plow also spreads sand and salt on the roadway to prevent ice patches from forming and to provide traction for

Christian Fisher, partner in Toms River Concrete Co., and Ocean Concrete Co., Manahawkin, reports, "My partner and I feel equipment is the keynote to success. We want the finest obtainable, and that's why we selected Heltzel."



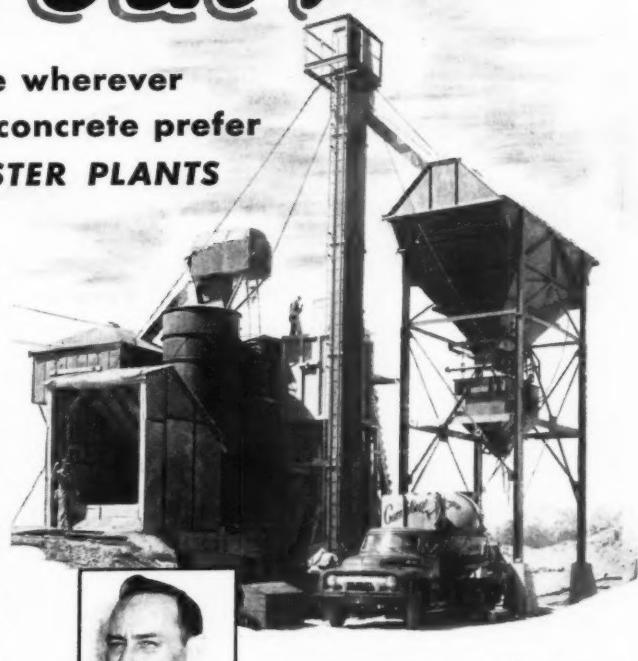
Heltzel stands out!

The story's the same wherever you go. Men who know concrete prefer
HELTZEL BATCHMASTER PLANTS

The eight Heltzel Batchmaster Plants pictured on these pages are grouped within a few miles of each other along the North Jersey Shore, furnishing contractors of that area with all their concrete requirements. This concentration of Heltzel equipment is typical throughout the nation, for these fast, accurate, profit-producing plants have a universal appeal for those who know concrete. There are dozens more of these plants in New Jersey, and hundreds of them spread throughout the 48 states, each providing its owner with efficient, trouble-free batching.

There's a reason for this leadership. Heltzel has been building concrete handling, forming and spreading equipment for almost 50 years. They know the industry and its needs. They have the background necessary to assure the finest in practical engineering, dependable products and quick service.

When next you're in the market for batching equipment, remember it costs no more to have the finest — that's a Heltzel Batchmaster* Plant!



At Wayside, New Jersey, Duncan Checker, owner of Campbell Concrete Co., says, "We looked them all over, and talked with a lot of people before we made our selection. I'd say we have the finest equipment possible in our new Heltzel Batchmaster".

*T.M.

THE HELTZEL STEEL FORM AND IRON COMPANY
89809 THOMAS ROAD
WARREN, OHIO

10019



For more facts, use Reader-Reply Card opposite page 18 and circle No. 258

vehicles. It displays a rear sign reading "Pass on Left".

The only difficulty in this operation last year was that traffic on the roadway slowed down the plowing operation. Then, the slower the plows moved, the thicker became the snow blanket. This also lengthened clearing time. Operators, responsible for specific lengths of roadway within their section, had to stay on the job longer as a result, re-plowing as long as necessary to keep the road open.

Equipment shifted

Only Division Engineers can order equipment shifted from one section to another within their division, should storm conditions in one section make clearing work more difficult than in other sections. Additional

equipment, located at Division headquarters, can also be sent out on the road to supplement section rigs already at work. Typical of a division roster is a list of equipment that includes an FWD 7-ton dump truck with spreader, a Sicard rotary plow, a Hi-Way abrasive spreader, a Walter 7-ton dump truck with plow, a Ford 2-ton dump truck with front reversible plow, a Snogo rotary snow plow, an Anderson abrasive spreader, and a Gradaill.

If a storm is particularly bad in one location, it shows up on the control map in "Communications", where Superintendent of Maintenance M. G. Dapson is usually found during such emergencies. Here, he can watch the storm as it is traced on the control map and try to anticipate its move-

ments. From this vantage point too, he can listen to the various Division Engineers and Section Supervisors talking to operators on the road.

Should the situation in one location become very bad, Dapson can order extra equipment to the hard-hit area. If the Buffalo Division has a tough time clearing the roadway, for instance, and the Syracuse Division adjoining it is not having such a bad time, Dapson can dispatch snow-fighting rigs from the Syracuse to the Buffalo Division. Only Dapson can order equipment from one division to another, and generally, equipment goes to a hard-hit spot from the closest section in the adjoining division.

Year-round operation

While the Thruway's communica-

tions system assumes added importance during the storms and emergencies brought on by winter, it functions 24 hours a day, throughout the year, to help Thruway personnel keep the road at a peak of service. One of the most valuable innovations in the system, a machine that automatically monitors and records all radio messages on a single magnetic tape, has proved extremely valuable in dealing with claims against the Thruway Authority.

If a state trooper radios his Division dispatcher for an ambulance to come to the scene of an accident, "Communications", using its monitoring system, calls the ambulance. When the ambulance enters a Thruway interchange, "Communications" is notified of the fact by the interchange. Then, if the ambulance is very late arriving at the scene of the accident, and a claim is made against the Thruway Authority, the tape recordings of all the transmissions made regarding this accident are available and can be played back to determine who was responsible for the delay.

This is done easily by establishing the time the distress call was made by the trooper, the time the ambulance was summoned, the time the ambulance entered the Thruway, and finally, the time the ambulance arrived at the scene. To date, the cost of the tape-recording device has been more than offset by the advantages it provides.

Personnel

Conrad H. Lang, the Chief Engineer of the Thruway Authority, has M. G. Dapson as his Superintendent of thruway maintenance. C. E. Vail is the Superintendent of equipment maintenance and at present has responsibility for over \$2,300,000 worth of equipment.

THE END



Monotube Piles provide STABILITY

for new Navy Berthing Pier



Monotube piles for the 100 feet wide and 1,350 feet long U. S. Navy Berthing Pier at Newport, R. I.

THE UNION METAL MANUFACTURING COMPANY
Canton 5, Ohio



For more facts, use Reader-Reply Card opposite page 18 and circle No. 259

UNION METAL
Monotube Foundation Piles

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■ Frink Roll-Over and One-Way snowplows for airport, highway, and street use are described in catalogs from Frink Sno-Plows, Inc. Pictured and described are the Roll-Over tapered and curved-paneled moldboard, two reversible cutting edges, and side-mounted wings. Data is given on the One-Way panel-type construction, replaceable cutting edge and nose shoe, hinged deflector and One-Way leveling wings. Job photos and complete specifications are included in the catalogs.

To obtain Catalogs 56-E and 56-R write to Frink Sno-Plows, Inc., 205 Webb St., Clayton, N. Y., or use the Request Card at page 18. Circle No. 51.

All-weather cabs

■ Northeast Equipment's steel-top all-weather cabs for Ford 8N and 9N tractors are described in a mailing piece from Northeast. The cabs feature inside loader controls, safety glass skylight and windshield, vinyl windows, and windshield wipers.

To obtain the mailing piece write to Northeast Equipment, Inc., P. O. Box 904, Worcester, Mass., or use the Request Card at page 18. Circle No. 71.

CONTRACTORS AND ENGINEERS



The keyed edges of Presto blocks allow a wall to be built without mortar. After the wall is erected, the joints are pointed with mortar to create a permanent moisture seal.

Concrete block consists of two parallel "walls"

■ A concrete building block consisting of two parallel "walls" joined by corrugated steel ties is announced by the Presto Brick Machine Corp., designer of the machine that forms the units. The Presto blocks will be manufactured locally under franchise from the machine company.

The top, bottom, and end surfaces of the Presto block are keyed to lock upon erection, forming a wall in which the inner and outer slabs of the block do not have a through masonry bond at any point. According to the company, this simplifies the installation of plumbing and electrical systems and provides an effective heat and cold insulation. No furring is needed because of the through air space between the walls of the block.

The blocks are laid without mortar between the joints. After a wall is completed, the keyed joints are pointed by hand or with a mortar gun, to provide extra strength and a permanent moisture seal. The concrete blocks are made of the same material as conventional building blocks and, therefore, have the same destruction-resistant features.

For further information write to the Presto Block Machine Corp., Empire State Bldg., New York, N. Y., or use the Request Card at page 18. Circle No. 113.

Portable heaters

■ Job photos, showing the varied uses of portable heaters, are contained in a catalog from the Herman Nelson Division of American Air Filter Co., Inc. The heaters are pictured in maintenance, repair, and storage shops, and in indoor and outdoor construction. The firm's three models pictured and described are the De Luxe I, an electric-powered unit that uses kerosene for fuel, and has a capacity to 450,000 Btu; the standard unit, which is powered and heated by gasoline, and has a 385,000-Btu capacity; and the electric-powered economy unit, which uses kerosene for fuel and has a 190,000-Btu capacity.

To obtain Form No. 3574-WP write to the Herman Nelson Division, American Air Filter Co., Inc., 200 Central Ave., Louisville 8, Ky., or use the Request Card at page 18. Circle No. 73.



PROBABLY THE WORST ROAD in the U. S. to clear is Pike's Peak toll road in Colorado Springs, Colo. The city uses an International TD-24 with hydraulic bulldozer to clear the 20-mile stretch to the summit of the peak.

ARMCO STEEL SHEETING SIMPLIFIES CONSTRUCTION JOBS

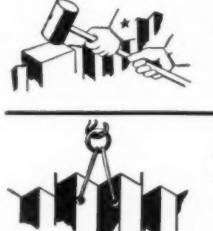
Practically every construction job involves some problem in controlling the movement of soil or water. And many of them can be solved—easily, quickly and economically—with Armco Steel Sheetings. Here are the advantages you get with the reasons for them.



STRONG, LIGHTWEIGHT: Because Armco Sheetings combines the advantages of durable metal and corrugated design you get a high strength/weight ratio.



EASY TO HANDLE: Because of its light weight, one man can easily carry and handle a section of Armco Sheetings. And they nest compactly in storage.

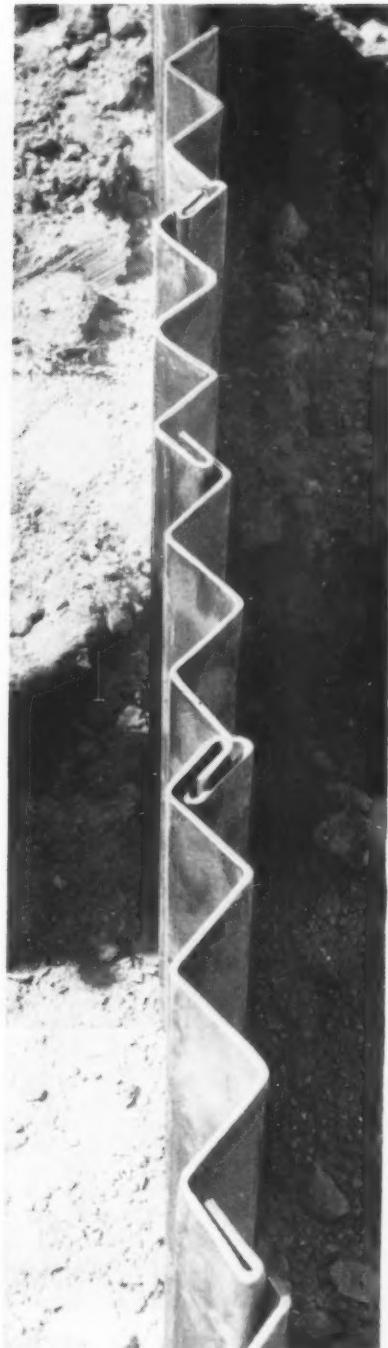


EASY TO DRIVE: Because of its small displacement area, it's usually possible to drive Armco Sheetings with hand maul or small driving equipment.



SALVABLE: Because Armco Sheetings is strong and straight, it can be used again and again as a construction tool. Convenient hole makes pulling easy.

ECONOMICAL: Because Armco Sheetings can be used over and over in all types of temporary jobs, unit costs drop lower with each re-use.



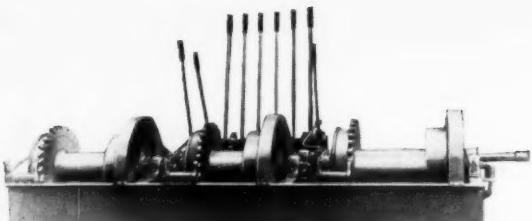
There are two types of Armco Sheetings: Interlocking and Flange. Principal difference is that Interlocking is used where practical watertightness is required. Both are supplied in a range of gages and in lengths up to 20 feet. Write for data. Armco Drainage & Metal Products, Inc., 4935 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.



ARMCO STEEL SHEETING

Manufacturers of: MULTI-PLATE Pipe, Arch and Pipe-Arch • Corrugated Metal Pipe • Welded Steel FLEX-BEAM Pipe • Guardrail • Water Control Gates • Retaining Walls • Steel Buildings • Sheetings • Bridge Plank • Tunnel Liner • Subdrainage Pipe • End Sections • Pipe Piling and Pile Shells

For more facts, use Reader-Reply Card opposite page 18 and circle No. 260



This King Mfg. Corp. dredge hoist has a 2½-ton capacity.

New dredge hoist raises 2½ tons on 10 horsepower

■ A compact dredge hoist has been announced by the King Mfg. Corp. The unit is 105 inches long, 36 inches wide, and 42 inches high. It has a 2½-ton capacity at 35 fpm and requires only 10 horsepower, according

to the manufacturer.

The cable drums are 16 inches long and 7 inches in diameter. The center drum is for hoisting a suction line boom or dredging ladder, while the outside drums are for swinging the

dredge left or right or moving it forward. Each drum is equipped with clutch and brake levers.

The same unit is available to hoist 5 tons. Also, a similar unit with 5 drums may be obtained.

For further information write to the King Mfg. Corp., 3138 W. Chicago Ave., Chicago 22, Ill., or use the Request Card at page 18. Circle No. 31.

New Shunk plant

A Tuckahoe, N. Y., plant has been acquired by Shunk Mfg. Co., Bucyrus, Ohio, which will help meet the demand for Shunk products and facilitate deliveries in the eastern and export markets. The new facility, known as Shunk Mfg. Co., Inc., is already in operation.



The Start Pilot is said to assure engine starting in temperatures as low as minus-60 degrees F.

Spraying device aids cold-weather starting

■ A permanently installed device which reportedly will assure the starting of diesel or gasoline engines in temperatures as low as minus-60 degrees F is available from the Start Pilot Corp., an American distributor of the European device.

The Start Pilot injects a small quantity of ignition-promoting fluid as a fine spray, mixed with air, into the engine intake manifold. The fluid is a low-ether-content blend packed in hermetically sealed capsules that can be stored indefinitely without deterioration, the company reports.

The Start Pilot kit consists of the main unit containing the capsule chamber and the hand-operated, double-action air pump, a spray nozzle which is screwed into the intake manifold, and copper tubing to connect the two components.

For further information write to the Start Pilot Corp., 258 Herricks Road, Mineola, N. Y., or use the Request Card that is bound in at page 18. Circle No. 123.

Hydraulic spreader works both winter and summer

■ A hydraulic material spreader recommended for handling ice-control materials with a minimum of maintenance, cost, and downtime, and also usable for summer maintenance and construction work, is the new Wausau Model RT-1.

The unit has no conveyor; instead, an ejector plate within the spreader box propels the entire mass of material forward to the point of discharge, as required. Speed settings for both the feed auger and spinner permit accurate control of the quantity of material and the width of the spread.

The entire unit is self-contained and can be mounted on any truck chassis. According to the manufacturer, other features include a self-cleaning body, exact control of spinner speeds, one-man cab control, low loading height, and low center of gravity.

For further information write to the Wausau Iron Works, Wausau, Wis., or use the Request Card that is bound in at page 18. Circle No. 21.

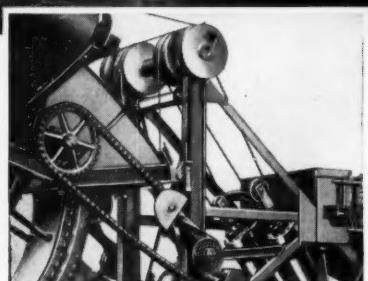
NOW!

Instant Hydraulic Control of Conveyor Speed and Direction

Only

**GarWood
Buckeye**

has it!



LIVE HYDRAULIC WHEEL HOIST, TOO!

Positions digging wheel faster, more accurately. Independent of all other operations. Operated from the seat by simple, one-hand controls.

Live hydraulics in new job-proved Buckeye ditchers make conveyor control far easier and faster than ever before. From the seat, the operator merely touches a lever for instant conveyor adjustment to handle any volume of spoil. Three discharge speeds in either direction meet every conveyor need. And, Gar Wood's exclusive hydraulic conveyor drive is completely independent of any other function. No complicated shifting...no need to stop digging wheel or crawlers. Maintenance is easier, too. No complicated drive transmission to adjust and repair.

All three of these new Gar Wood-Buckeye models—the 305, 307 and 308—have this and many other important features. For complete data and specifications, call your Gar Wood-Buckeye dealer or write direct to: Customer Service Department, Gar Wood Industries, Inc., Wayne, Michigan.

GAR WOOD INDUSTRIES, INC.

Wayne, Michigan • Findlay, Ohio

Plants in Wayne and Ypsilanti, Mich.; Findlay, Ohio; Mattoon, Ill.; Richmond, Calif.



For more facts, use Reader-Reply Card opposite page 18 and circle No. 261

One of five channels in the RCA microwave radio system used to coordinate work on the Ohio Turnpike links administrative and maintenance areas exclusively. This maintenance man uses a two-way radio to confirm an order dispatching an Oshkosh heavy-duty truck with snow plow to a trouble spot. ▶



Microwave, mobile radio spur snow clearing on Ohio Turnpike

Snow and ice removal during the first winter of operation for the Ohio Turnpike were virtually on a push-button basis, largely because of a communication system combining the advantages of two-way radio and a microwave system.

The heart of the system is a 7-hop RCA 2,000 megacycle microwave link, based at the eight maintenance areas along the 240-mile road. The 250-foot-high microwave towers, spaced 30 miles apart to relay messages between stations, are capable of carrying 24 voice channels. Only five are being used at the present time, one of them using teletype selective signaling to carry messages concerned with turnpike business. This channel carries weather reports three times daily, and transmits storm warnings as soon as they are received. At the first report of snow or ice, all maintenance crews are alerted by teletype so that the superhighway can be kept open.

Another channel is a radio telephone-voice channel that connects all maintenance areas with the turnpike administrative building in Berea. This provides both party-line and selective-signaling facilities. Central radio uses the channel that interconnects with the maintenance areas to direct crews to trouble spots.

Of the three remaining channels, one is used to link toll booths, administrative vehicles, and auto-repair trucks with the administration building. A second is used by the Ohio State Highway Patrol, which has cars equipped with RCA Carfone 150 two-way radios. RCA Service Co. personnel uses the fifth channel to keep a check on the entire communications system.

Ice control unit

The entire line of Baughman ice control spreading equipment is described in a bulletin. According to the catalog, all models give a uniform controlled application of cinders, sand, salt, and chloride. Outstanding feature for the truck-mounted Model FS-56 is a spreading range from 1½ to 40 feet; the Model K5-SC offers a choice of four drives. Complete details are included on tailgate, dump-body, pull-type, and gravity-feed spreaders.

To obtain Form No. A-408 write to Baughman Mfg. Co., 192 Arch St., Jerseyville, Ill., or use the Request Card at page 18. Circle No. 105.

As snow starts to fall on the turnpike, Oshkosh trucks head out, pausing only in the maintenance area to be loaded with Dowflake by a Hough Payloader. All these trucks are equipped with RCA two-way radios. ▶



FOR YOUR CONSTRUCTION EQUIPMENT!

The sludge on that tow car hook spells big trouble for your construction equipment. Grit and dirt picked up by Diesel fuel and motor oil can do real damage to fuel injectors, cylinders and bearings. Your downtime and maintenance costs go way up, unless gritty sludge is removed constantly by effective filtration—*WIX Engineered Filtration*.

WIX saves time and money for you many ways! The WIX Line of top-quality, HEVI-DUTY Oil Filter Cartridges is complete. It handles every filtration requirement, including Diesel fuel and lube oil. It helps you cut maintenance costs on every filter-equipped engine with Cartridges especially designed for every application and every type of construction service. WIX surveys your filtration needs FREE, sets up an Inventory Control System

tailor-made to your needs, and provides a back-up supply of every Cartridge you use, carried by your local WIX wholesaler to give you immediate service.

Ask for your FREE Survey and complete details on time-saving WIX Engineered Filtration Service. Call your nearest WIX Jobber or write direct today!

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For more facts, use Reader-Reply Card opposite page 18 and circle No. 262

winter

work



Part of an underground storage structure has been cast, despite a fresh fall of snow, and is covered with tarps. Salamanders provide heat inside the covering. The larger excavation, made with scrapers, facilitates backfilling.

C&E Staff Photo

Nike, the Army's guided missile named for the Greek goddess of Victory, is poised to repel any potential enemy bombing of the Chicago industrial area.

Construction of the 25 missile-storage and launching facilities that ring the Windy City involved many contractors, some of which worked at more than one location, though construction at each of the sites was done under separate contracts awarded by the Chicago District, U. S. Army

Corps of Engineers. The first facilities built form a line along the lake front, while later installations complete the ring around the city.

Reasonably typical of the work on these installations is the operation completed by Lee Construction Co., Chicago, on a million-dollar job just north of the Cook County line near U. S. 14. Portions of the work were divided among 13 subcontractors, and the general contractor worked through last winter to complete con-

crete placement to meet his completion date of June 30, 1956.

In addition to the three underground storage structures at the launching area for the radar controlled missiles, there are a number of other buildings at the site. All but the storage structures are of concrete-block construction with concrete slab floors and frame or steel-joint roofs. A generator building houses three 150-kw diesel generators that provide power independent of the high lines,

Nike launching basform

and a missile assembly and test building is located near the storage structures.

Some of the facilities for officers and subordinates manning the station include barracks with officers' quarters attached, a mess hall, and an administration building. The water supply at the site is an 18-inch well, drilled to a depth of 227 feet. The sewage-disposal system consists of an Imhoff tank and sand filter. All of these supporting facilities are located

WHEN IT'S **COLD** keep your job moving

Clayton SUMMERAIRE

"120" 120,000 BTU's at 950 cu. ft. of heated air per min. \$190 F. O. B.

New Medium Capacity Portable Heater

Announcing the new Clayton Summerraire "120" Portable Heater . . . a revolutionary "climatizer" especially designed for the construction industry. Small, light, compact, sturdy, the "120" is ideally suited to room-by-room drying of plaster, paint, masonry; for thawing out ground, aggregates, equipment.

MORE SAFE, ODORLESS HEAT AT LOWER COST

The Clayton Summerraire "120" delivers 950 cu. ft. of heated air per minute; 120,000 BTU's per hr., producing a temperature rise of 150°F. Burns less than 1 gal. fuel oil or kerosene per hr. Electric solenoid valve cuts off fuel supply in event of power failure. Controlled flame in enclosed combustion chamber insures odorless, fume-free air delivery. Other models in "300" series offer hourly heating capacities up to 375,000 BTU's per hr., electric or gasoline engine driven, with or without automatic thermostat control of pre-set temperatures. Ask for demonstration.

CLAYTON MANUFACTURING CO.
BOX 550, EL MONTE, CALIF. CE-1056

() Send me literature on new Model "120" Summerraire
() Send me literature on Model "300" Summerraire
() I'd like a free on-the-job demonstration without obligation

NAME _____
FIRM _____
ADDRESS _____
CITY _____ STATE _____

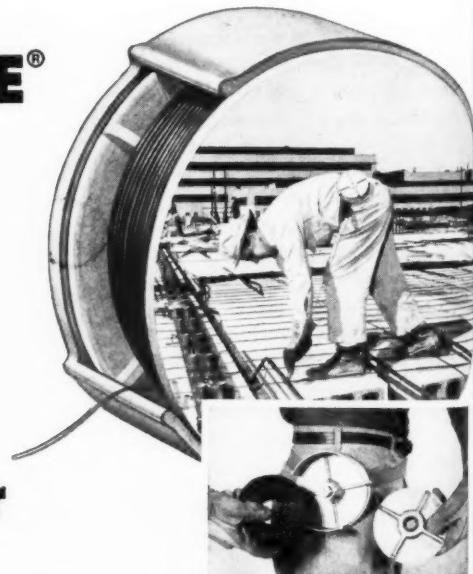
PRE-HEATING MOTORIZED EQUIPMENT FOR EASY STARTING
DRYING NEW CONSTRUCTION: PLASTER, PAINT AND MASONRY
SPACE HEATING SEMI-ENCLOSED WORK AREAS
THAWING OUT FROZEN BULK SHIPMENTS, AGGREGATES, COAL, ETC.
PREVENTING THE FREEZING OF CONCRETE IN CURING STAGE

Clayton MFG. CO.
Box 550
El Monte, California

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 263

68

CAL-TIE® WIRE in the handy reel dispenser



safe to use...

easy to use...

Cal-Tie Wire in the handy reel dispenser makes concrete reinforcement tying jobs safer because there's no old-fashioned shoulder coil to throw workers off balance . . . no awkward coil to catch on protruding objects . . . no danger of eye injuries . . . no scratches on neck or ears to become infected . . . and Cal-Tie Wire has a smooth, even surface.

Contact your nearby CF&I representative today for the complete story on this safe, easy and modern way of tying concrete reinforcement bars.



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WICKWIRE SPENCER STEEL DIVISION—Atlanta • Boston • Buffalo • Chicago • Detroit • New Orleans • New York • Philadelphia
CF&I OFFICE IN CANADA: Toronto • CANADIAN REPRESENTATIVES AT: Calgary • Edmonton • Vancouver • Winnipeg

For more facts, use Reader-Reply Card opposite page 18 and circle No. 264

CONTRACTORS AND ENGINEERS

basform complicated job



Construction nears completion on one of the 25 storage buildings that ring Chicago. Concrete for a roof pour is being swung from ready-mix trucks to a form by a Bucyrus-Erie 51-B crane with an Inslay 1½-yard bucket.

near the housing or launching areas.

In the control area, at the opposite end of the site, are three concrete pads for the radar detection equipment. This is at least 1,000 yards from the ground-level launching platforms and provides complete control of the missiles in the air. A small ready building, and an interconnecting corridor generator-frequency changer building are also located here.

Of the three radar-detection and control installations at each site, one

is used to detect the approach of planes, the second fixes on one plane selected as the target, and the third fixes on the missile. The latter two are coordinated by an electronic brain, located at the control area, which directs the missile to its target, regardless of the maneuvering action taken by the bomber. The missile can be detonated from the control station at the launching site.

One of the big problems at each of the Nike sites was building the three

or more underground storage structures. Practically all of these were below normal ground-water level, and excavating for the structures adjacent to Lake Michigan or in other low areas required extensive wellpointing and dewatering.

At the installation being built by Lee, however, conditions were relatively dry when construction started on September 11, 1955. Excavations for the three major structures were made by Caterpillar D8 tractors and

LeTourneau scrapers by Lindahl Bros., Chicago. The excavated material was built up into an earth revetment that protects the above-ground structures at the housing area and the launching positions. After the embankment had been built up in layers, it was compacted by a sheepfoot roller.

The scrapers left larger excavations than were made by draglines at other sides, but their size and their sloping sides enabled concrete trucks and

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6" CARBIDE BIT
...the
HOLE-MASTER**

Two air holes, and wide chip channels, permit this down-the-hole bit to discharge more and larger chips—to work in rock, not its own cuttings. Get the complete details—we'll be glad to demonstrate.

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Please send me information on your 6" carbide down-the-hole drill bit—the Hole-Master.

Send information also on your 6" carbide Rok-Master bit for use with the Quarrymaster drill.

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TITLE _____
COMPANY _____
ADDRESS _____
CITY _____

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 265

Speed up CONSTRUCTION

BY DRILLING
PIER HOLES
BELLED FOOTINGS
CAISONS



World's fastest method
of boring in all types of soil

CALWELD BUCKET TYPE EARTH DRILLS

CUT FOUNDATION COSTS in a hurry by drilling caissons, pier holes and belled footings faster with Calweld Earth Drills. You can save up to 40% in drilling and belting because every operation is mechanical, thereby eliminating slow, costly hand labor and danger to workers.

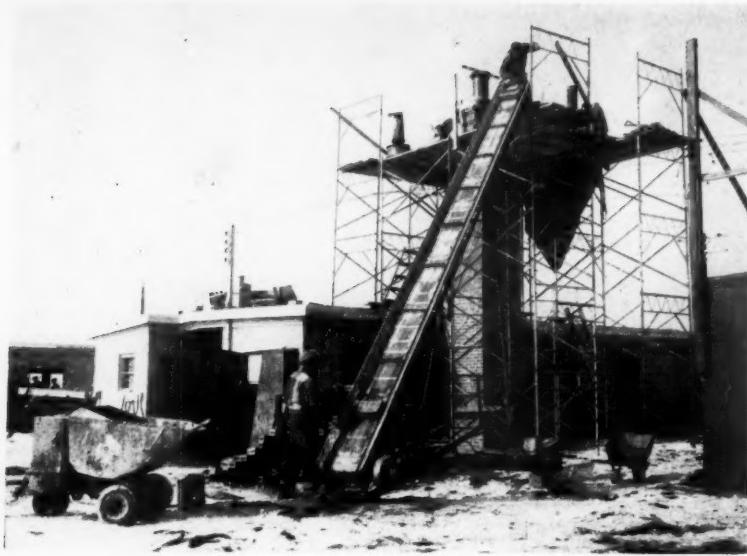
Built on skid frames for easy mounting on trucks, Calweld Earth Drills can be moved quickly and set up to handle multiple bores with almost no lost drilling time. They bore holes from 16" to 102" in diameter to depths of 200 feet, removing up to 1.4 cubic yds. of earth in each pass.

Specially designed interchangeable buckets speed up boring and earth moving operations in all types of subsurface formations. From start to finish, Calweld Earth Drills save you money because they do a better job... FASTER!

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DRILLS 16"-102" HOLES 200 FEET DEEP

For more facts, use Reader-Reply Card opposite page 18 and circle No. 266



Though weather is not warm enough to melt the snow on the ground, masonry work keeps moving. A Sam Mulkey conveyor raises brick to a workman on the scaffold, while the Moto-Bug, foreground, is used to haul mortar and other materials at the site.

C&E Staff Photos

other equipment to get into the excavation by means of the ramp left by the earthmovers. Equipment required in placing and compacting the backfill also had more room to work and, as a result, was able to do a good job more economically.

Near the center of the excavation, about 22 feet below grade, a 2-foot-diameter hole was drilled to a depth of 20 feet to accommodate the shaft of the hydraulic elevator. After casing had been set and was supported by concrete in this hole, the hydraulic cylinder was installed inside the casing.

Even in the relatively dry locations, the waterproofing of the structures was an important consideration. At some of the sites, a mud slab was laid in the excavation and five-ply membrane waterproofing material was applied to the top of this slab before the floor slab of the structure was placed over it. This same membrane waterproofing material was carried up around the outside of the structure and over its top. Half-inch insulating board was placed over the waterproofing on the sides and top before backfill was placed. Thus, the structures are completely dry inside, even though the ground-water level in many cases stands near the roof line.

Winter concrete work

Lee had three projects like this under construction at one time, and much of his concrete had to be placed during the months of December, January, and February. On this typical job, a 4-inch concrete slab was placed over the entire area to be occupied by each of the structures, then the five-ply membrane waterproofing was mopped onto the slabs with hot tar. Forms were then set, and the heavily reinforced concrete floor poured over the waterproofing.

Forms set for the walls of the box-like structures were built of $\frac{3}{4}$ -inch plywood backed by 2×4 studs and double 2×4 wales. The wall forms were tied with Superior cone-type ties. Some of the form panels were prefabricated, but workmen built others in place, using SkilSaws to cut the plywood.

Ready-mix concrete was supplied by Consumers Ready Mix, Arlington, Ill. Pours were made by buggies, work-

ing from scaffolds, which dumped to elephant trunks carrying concrete to the bottom of the wall forms to prevent segregation. Mall electric vibrators worked the mix in around the maze of reinforcing bars. When concrete placement was going on in cold weather, the forms were covered with tarpaulins and heated concrete used. If the temperature dropped low enough, Insto-Gas salamanders and Chinook Wind heaters provided heat under the tarps.

Roof slabs

The top of the roof slab of these structures is about three feet below grade. Hatchways extend up to grade at the personnel entrance and over the big elevator that brings the missiles to the surface. The launching



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platforms are located at ground level above the structures, and for this reason, the reinforced-concrete roofs had to be built so they could withstand the load imposed as the missiles are fired. The massive girders, beams, and slabs of the roofs are heavily reinforced, and it required a great deal of work with vibrators to get the concrete into place.

When the walls and roof had been placed and cured and the forms had been removed, waterproofing, done by Rosneau Roofing Co., Chicago, was carried up the walls, over the top of the structure, and tied into the hatchways. This waterproofing was then covered with $\frac{1}{2}$ -inch insulating board before backfilling was done.

The heavy structural steel sections of the elevator and hatches, furnished

to the contractor by the U. S. Army Corps of Engineers, were set in place with the aid of a rented crane, and then welded together.

Most of the buildings—aside from the storage structures—have concrete slab floors and masonry walls with furring and gypsum board dry wall interiors. The concrete slab floors, finished with a Whiteman mechanical troweling machine, are covered with asphalt tile. Joints, if required, were made in the slabs with a Felker concrete saw.

Masonry work on the buildings was expedited by the use of a Sam Mulkey conveyor that raised brick, concrete blocks, and other materials to workmen on scaffolds. A Moto-Bug transported mortar and other materials from place to place around the site.



Some of the forming for the underground structure is prefabricated; other forming is made on the job. This workman uses a SkilSaw to shape plywood forming for the roof, which serves as the launching platform.

Both the elevator and the power buggy were driven by Wisconsin engines.

Worthington air-compressor-powered air tools were used for such jobs as digging the clay, compacting backfill in restricted areas, and cleaning joints. A Miller generator, driven by an Onan gasoline engine, was used for many welding operations in assembling the steel sections of the storage structures. It also supplied electric power for tools in areas too remote for power lines to be extended.

The more unusual of the buildings at the site, however, are the storage structures, which have personnel rooms carefully insulated from the main storage room. When missiles are being fired, the men working in the launching areas get into these rooms for protection. The rooms are actually two concrete boxes, one inside the other. There is a 1-foot space between the walls on three sides of the room, and a 4-foot space filled with uncompacted cinders on the side nearest the storage room. A 4-inch layer of Servicized structural cork cushions the concrete floor.

The entrance to the personnel rooms is through a corridor from the main structure. There is also an escape hatch leading to the surface of the ground, and this can be used in case of emergency.

Each of the box-like storage structures
(Concluded on next page)

TRAILMOBILE aluminum cement bulker

a strong, streamlined, service-proved design

The newest thing about the Trailmobile aluminum cement bulker is the aluminum itself—for we have constructed in aluminum the same strength and ruggedness, the same safety and ease of operation that have made Trailmobile's steel bulkers high-profit performers for years.

In the aluminum bulker a weight saving of approximately 3,000 lbs.* gives you as much as 7% more payload capacity—enough added revenue in many operations to repay the cost of the trailer itself in a matter of months. We've also streamlined the unit by providing a smooth skin side without ribbing of any kind. And we've proved the over-all design under actual operating conditions during the past two years.

The Trailmobile aluminum bulker is a part of a complete line of bulk commodity trailers that meet every need. Call or write your nearest Trailmobile branch office for complete information.

*on 130-barrel unit

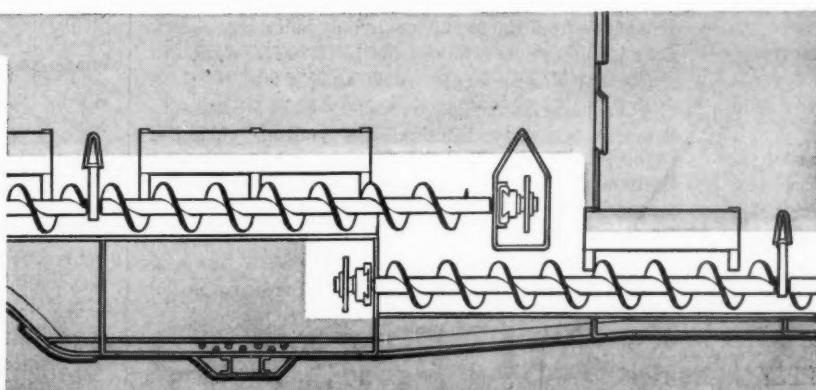
TR-476

TRAILMOBILE INC.

Cincinnati 9, Ohio • Springfield, Missouri • Longview, Texas • Berkeley 10, California

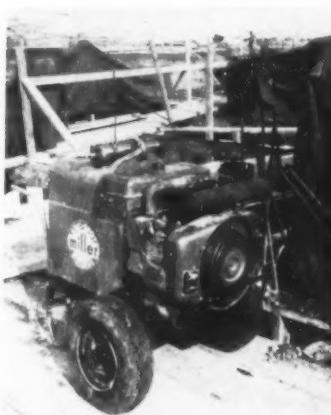
Trailmobile's exclusive step-down construction

Provides two single screws which operate independent of each other using $\frac{1}{2}$ as much horsepower as required by full length screw designs. This allows faster, positive unloading, and reduces maintenance due to shorter screw length and a smaller power unit.



For more facts, use Reader-Reply Card opposite page 18 and circle No. 267

OCTOBER, 1956



Set near tarp-covered concrete, an Onan-powered Miller generator is available for welders or power tools, or for lighting, during the course of the project.

71

tures is equipped with an elaborate ventilating system that quickly removes fumes discharged as missiles are launched. All plumbing in the missile-storage and launching area is either exposed, or made of the Duriron acid-resisting type to resist fumes from the fuel used for the missiles. Each box is also equipped with two large dehumidifiers to control humidity.

Obtaining sites for these installations in the Chicago metropolitan area required the cooperation of many agencies and individuals. Some of the sites are in public parks, where the design of the structures and the construction operations were controlled so that a minimum of damage was done to the surrounding area. In other cases, private property was purchased

or obtained under condemnation procedure for the sites.

Personnel

The supervisor of the operations concerning the Lee Co. on this job was Einar Johnson, project manager. He was assisted by Emil Lulkin, superintendent.

Representing the Corps of Engineers at the site was Major L. J. Henderson, resident engineer. The area engineer is LeRoy Olson. The district engineer for the Chicago District is Col. Philip F. Kromer, Jr. THE END

Nylon tents facilitate cold-weather operations

■ Nylon construction tents, recommended for enclosing construction

projects and maintenance areas during cold or otherwise inclement weather, are available from Hoosier Tarpaulin & Canvas Goods Co., Inc. The tents are made of vinyl-coated Tuff Tarp Superlite nylon.

According to the manufacturer, the Tuff Tarp material is waterproof, flame resistant, tear resistant, and will not shrink. It acts as an insulator in aiding cold-weather heating. The tenting material is available in cut sizes up to 60 x 40 feet.

The construction tents are available in various styles complete with poles, stakes, and block and tackle.

For further information write to Hoosier Tarpaulin & Canvas Goods Co., Inc., 1302-10 W. Washington St., Indianapolis 6, Ind., or use the Request Card at page 18. Circle No. 106.



Penetrating oil sprayed from pressure container

■ A penetrating oil that is dispensed from a pressurized can capable of ejecting as much as a 3-foot spray is available from the Rothlan Corp. Marla Aero Spray is recommended for use on corroded bolts, screws, pipe threads, bearings, bushings, pulleys, manifolds, valve guides, locks, and any other metal pieces.

According to the manufacturer, the Aero Spray will penetrate into spaces as narrow as a millionth of an inch. It is a non-acid, non-alkali fluid. Always ready for use in its pressurized can, the oil can be stored and carried easily.

For further information write to the Rothlan Corp., 3618 Laclede Ave., St. Louis 8, Mo., or use the Request Card at page 18. Circle No. 119.



Berger Transit narrows problems on world's widest vehicular tunnel

Deflections. Angles. Curves. Each construction job contributes its share. But the 13½ million dollar tunnel section of Boston's new J. F. Fitzgerald Expressway had them in spectacular abundance. And when V. Barletta Co. of Roslindale, Mass., was awarded this big contract, they knew that the instrument needed to see them through the job would have to be tops in accuracy and dependability. That's why they chose the BERGER 6½" Bronze Transit.

Here's an idea of some of the problems they met:

On the approach to the slab area, some 20,000 yards of concrete—over 90 separate pours—were held to within 1/100th of a foot.

Where the approach goes underground, the base lines of the steel structure are on a series of curves. These base lines—and all points on both sides of the structure—were run 15 to 20 times to assure absolute accuracy.

Anchor bolts were set within 1/16". Pre-cut steel beams had to fit exactly. They did.

Problems of laying out, alignment, elevation, leveling—the BERGER Transit was given a complete workout, day in and day out.

Said Barletta Co. engineers: "It does the job—and then some. Graduations stand out clearly for easy reading. Telescope focuses quickly over long and short distances—from 100 to 500 feet in only half a screw turn. Easy to center over a point from 15 to 20 ft. height. No problem picking up targets—even at 1200 feet."

Where accuracy is at stake, leading engineers and construction men buy BERGER. Put yourself behind a BERGER—and see why. C. L. BERGER & SONS, INC., Williams St., Boston 19, Mass.



Write for a copy of "ACCURACY IN ACTION"

Engineers' Transits
Builders' Instruments
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THE BEST IN SIGHT IS

BERGER

ENGINEERING AND SURVEYING INSTRUMENTS...SINCE 1871

For more facts, use Reader-Reply Card opposite page 18 and circle No. 268

Hose-selector card

■ A pocket-size selector card for rubber-covered hydraulic hose is available from the Republic Rubber Division of Lee Rubber & Tire Corp. By starting with any known factor such as the inside or outside diameter, minimum burst, required working pressure, or bend radius, the maintenance man can determine the proper Wiretex hose for his needs.

To obtain the selector card write to the Republic Rubber Division, Lee Rubber & Tire Corp., Youngstown 1, Ohio, or use the Request Card at page 18. Circle No. 78.

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Insulated underclothes are light in weight

■ Insulated undergarments that are said to be effective in temperatures as low as minus 40 degrees, but weigh half as much as an ordinary lightweight topcoat, are available from the Budd Insulated Products Co. Use of the two-piece garments—Warmjohns for subzero weather and Comfortall for extremely low temperatures—allows the wearer to go from the icy outdoors into a heated room and remain there indefinitely in comfort without removing the clothing, according to the manufacturer.

The garments are made of balloon cloth into which Temp-tron, a patented insulating material, is fabricated. Temp-tron, made of wool, acetate, and dacron fibers, creates a permanent air chamber that shields the wearer from heat and cold and maintains the body temperature at a normal level.

The quilted suits consist of a jacket and trousers which are worn directly over cotton shorts and a T-shirt, and under any type of lightweight trousers and jacket or shirt. The Warmjohns weigh 34 ounces and the Comfortall 38 ounces, as compared to 80 ounces for the average lightweight topcoat.

For further information write to the Budd Insulated Products Co., 112 W. 34th St., New York, N. Y., or use the Request Card at page 18. Circle No. 22.

Dust Suppression firm moves to new office

The administration offices, engineering department, and testing laboratory of the Dust Suppression & Engineering Co., Lake Orion, Mich., manufacturer of a wet-type dust collector, have moved to a new office building at 120 South Broadway, in Lake Orion. Elbridge M. Smith will join the firm at its new location as assistant chief engineer.

Level and tape measure incorporated in one unit

■ A 10-foot tape measure with an accurate, unbreakable level incorporated in its case has been announced by the Keuffel & Esser Co. The LST measure has a replaceable Wyteface tape. A sliding end-hook assures accuracy for both inside and outside measurements. The case is die-cast and chrome-plated.

For further information write to Keuffel & Esser Co., Adams and Third Sts., Hoboken, N. J., or use the Request Card at page 18. Circle No. 109.



The K-E tape measure has a level built into the case.

OCTOBER, 1956

UNEXPECTED DOWPOURS OR COLD WEATHER can't halt work being done by a Hough Payloader equipped with a detachable, sliding Campbell cab. The cabs roll on ball-bearing rollers in a steel channel for easy opening and closing. Available for Payloader Models HU, HH, and HO, the cabs have safety glass throughout and are sealed with rubber to make them weathertight. The windshield and skylight have tinted glass to reduce eye-strain, and a rear-view mirror is standard equipment. An access ladder is also supplied with each cab. For more details on the cab, circle No. 23 on the Request Card at page 18, or write to the Campbell Detachable Cab Co., Wauconda, Ill.



GULF PRODUCTS and FINE SERVICE keep equipment rolling on Arkansas Flood Control Project



Atlas Construction Company, Vidalia, Louisiana, has the contract for a 70-mile irrigation ditch for an important flood control project in Arkansas. Gulf lubricants and fuels help keep every unit of equipment running smoothly on a tough operating schedule of 24 hours a day, 7 days a week.

Gulf Oil Corporation • Gulf Refining Company

1822 Gulf Building, Pittsburgh 30, Pa.

CE

Gentlemen:

Please send me a copy of your new brochure, "Gulf and Your Business."

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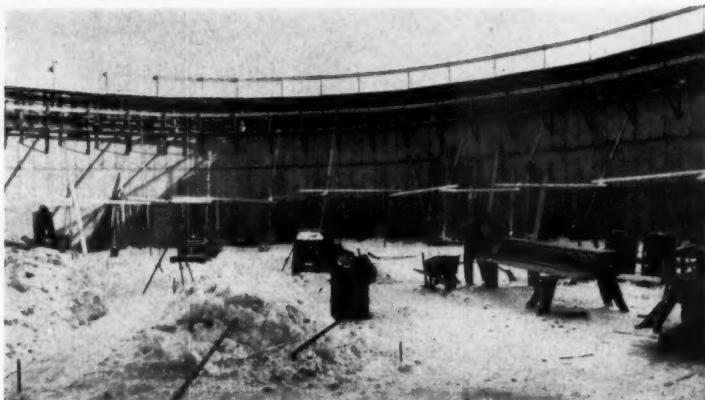
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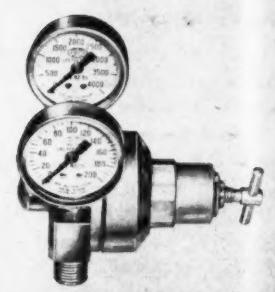


For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 269



Symons 2 x 6-foot panel forms were used in pouring the structure, which is 130 feet in diameter and 25 feet high. The Cahill-Mooney Construction Co., Butte, used 5,000 feet of the forming in doing the job. For information on Symons panel forms circle No. 107 on the Request Card at page 18, or write to the Symons Clamp & Mfg. Co., 4249 W. Diversey Ave., Chicago 39, Ill.

LAST YEAR'S SNOWY MONTANA WINTER failed to halt work on a 2½-million-gallon reservoir tank for the Butte municipal water department.



The Airco Series 8000 two-gage pressure regulator weighs 38 ounces.

Pressure regulators for oxygen, acetylene

■ A line of inverse-type oxygen and acetylene pressure regulators has been announced by the Air Reduction Sales Co. The Airco Series 8000 regulators are recommended for small metal fabrication and maintenance shops where initial cost is a factor.

The two-gage type measures 4½ x 4½ inches and weighs 36 ounces; the single-gage unit measures 3½ x 5½ inches and weighs 33 ounces. The regulator body is a machined brass forging and the spring case is a zinc die casting protected by a clear iridite finish for increased corrosion resistance.

For further information write to the Air Reduction Sales Co., Division of Air Reduction Co., Inc., 150 E. 42nd St., New York 17, N. Y., or use the Request Card at page 18. Circle No. 111.



ADAMS DIVISION: LE TOURNEAU-WESTINGHOUSE COMPANY mounts their motor grader's final drive on Timken tapered roller bearings to take radial, thrust loads in all combinations, hold shafts in rigid alignment, reduce gearwear.

Makes the grade, takes the shocks with TIMKEN® bearings

A MOTOR grader must be tough! That's why this one, built by Adams Division, Le Tourneau-Westinghouse, has Timken® tapered roller bearings in 20 vital spots: front wheels, tandem axles, final drive, transmission and power box drive. There is no dissipation of power, with Timken bearings at work—because they practically eliminate friction, conserve power, boost machine efficiency! And Timken bearings, with their tapered construction, take radial and thrust loads in any combination.

This machine's work—bank sloping, ditch cutting, scarifying, subgrading, mixing, snow removal, etc.—sets up heavy shock loads. Timken bearing rollers and races are case

carburized; hard surfaces resist wear, and tough cores take the heavy shock loads. Full line contact between rollers and races gives extra load-carrying capacity.

Maintenance on the Adams motor grader is greatly reduced, too. Timken bearings hold shafts in rigid alignment, let gears mesh easily, which means they last longer. And Timken bearings hold shafts concentric with housings, which makes closures more effective in sealing out dirt, dust, water, keeping lubricant in.

Geometrically designed to give true rolling motion, Timken bearings are precision-made to live up to their design. We even make our own steel, which no other American bear-

ing manufacturer does. Always look for the trade-mark "TIMKEN" on every bearing! The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".



This symbol on a product means its bearings are the best.



Arc welders

■ Lincoln Electric's ac and dc motor-generators and transformers are featured in a bulletin. Specifications and dimensions accompany data on the SAE-600 dual continuous control welder, and on the SA-750 variable voltage motor-generator. Applications, construction features, and specifications are included on the AC-750 and the AC/DC-750 automatic welders. Complete information is given on the applications for dc welding and on the general construction of dc generators.

To obtain Bulletin SB-1358 write to The Lincoln Electric Co., 22801 St. Clair Ave., Cleveland 17, Ohio, or use the Request Card at page 18. Circle No. 61.

TIMKEN TAPERED ROLLER BEARINGS ROLL THE LOAD

TRADE-MARK REG. U. S. PAT. OFF.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 270

All decked out for winter operations, this IHC 300 tractor sports Arps half-track treads, a scarifier blade, and a dozer blade, in addition to the rear-mounted utility blade.

Utility blade attachment for snow-clearing jobs

Rear-mounted utility blades, recommended for use in clearing snow disposal areas and highways, are available from the Arps Corp. The blades attach to the three-point linkage of such tractors as the International 300.

The blades may be tilted, reversed, angled, and offset without the use of special tools. Other applications than snow removal include ditching, grading, and backfilling.

For further information write to the Arps Corp., New Holstein, Wis., or use the Request Card at page 18. Circle No. 96.

Storage batteries

A bulletin from Nickel Cadmium Battery Corp. details Nicad heavy-duty storage batteries. The batteries are said to be of all-steel construction with welded joints, and the plates reportedly cannot shed, buckle, or swell. The battery can operate in temperatures up to 145 degrees F., and recharging may be done with standard charging equipment. Job photos show the units used for starting heavy-duty gas, and gasoline, and diesel engines, and operating stand-by generators and remote power sources.

To obtain Bulletin No. 168 write to the Nickel Cadmium Battery Corp., 70 Pleasant St., Easthampton, Mass., or use the Request Card at page 18. Circle No. 74.

Aggregate tunnel lining

Armco Multi-Plate and liner plate for aggregate tunnel construction are described in a folder from the company. The Multi-Plate structures are available in round, elliptical, arch, and pipe-arch shapes, according to the folder. Job photos show circular and elliptical liner plates used under aggregate bins, highways, and railroads. The specifications table states that the Multi-Plate structures come in diameters from 5 to 15 feet in 6-inch increments. Circular liner plates, according to the specifications, come 4 to 15 feet in diameter in 2-inch increments.

To obtain Folded CS-9456 write to Armco Drainage & Metal Products, Inc., 703 Curtis St., Middletown, Ohio, or use the Request Card at page 18. Circle No. 44.

Flintkote to build Mid-Western plant

The Flintkote Co., New York, N. Y., has announced plans to build a third Insulrock producing plant in North Judson, Ind., southeast of Chicago.

The Insulrock Division produces an acoustical, insulating, and fireproof building material for roof decks and ceilings, floor slabs, and interior sheathing.

For more facts, circle No. 271 →

OCTOBER, 1956



Pipe benders

Lidseen pipe benders, featuring calibrated degree scales, are described in a bulletin from Gustave Lidseen, Inc. The units are able to bend $\frac{1}{2}$ to $1\frac{1}{2}$ -inch-diameter pipe to an angle up to 180 degrees. Data is included on the capacity, performance, and bending circles of the units. Complete information is given on the operation of the pipe benders.

To obtain Bulletin 556 write to Gustav Lidseen, Inc., 1000 First St., Hayesville, N. C., or use the Request Card at page 18. Circle No. 64.

The Euclid TC-12 gives you more work-ability than other Crawlers



The first really new tractor concept in years...
with ALL the performance features you've wanted

Euclid's Model TC-12 Twin-Power Crawler establishes an entirely new standard of tractor performance. It's built to deliver unequalled drawbar horsepower, easy operation and a smooth, steady flow of power to meet any job requirement. It provides easy accessibility of all major components and all lubrication, check and adjustment points are located for maximum convenience. Unitized assemblies permit service or removal without a major tear-down of other parts.

Powered by two 194 h.p. engines at rated speed, 365 h.p. is delivered to the power

train. Each of the tracks is driven independently through separate Torqmatic Drives giving the TC-12 faster, easier steering and greater drawbar pull at higher speed. There's no clutch-shifting from one of the three speed ranges to another is done under full power — top speed in forward or reverse is 8.3 mph.

Have your Euclid dealer give you all the facts on the TC-12—compare with your present big tractor equipment and you'll know why so many owners have proved that **Euclids are your best investment.**

EUCLID DIVISION, GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

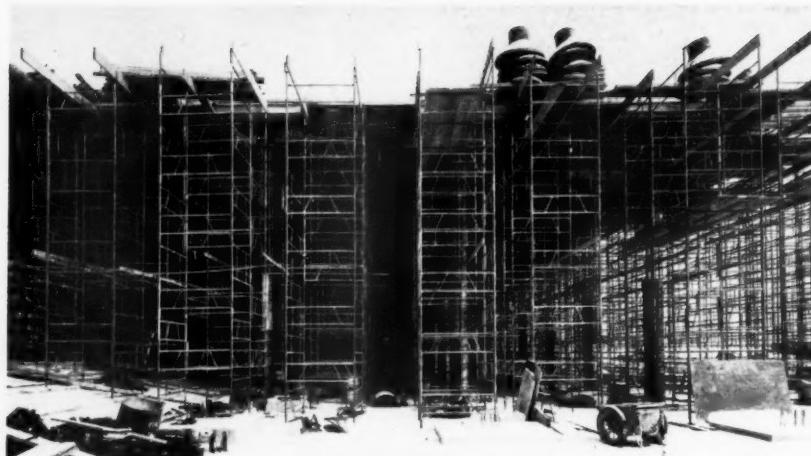
Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE



winter
work

Tarps hold heat during pour on concrete reservoir roof



Though snow crusts the work area, deck forming continues. The Patent scaffolding towers supporting the deck have adjustable legs that keep deck forms level, even where the floor slopes sharply as it does at extreme left.

Tubular steel scaffolding supports forms for roof slab; heat provided at 8 million Btu per hour is held by 55,000 square feet of canvas

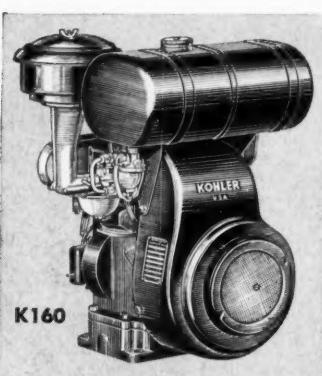
KOHLER ENGINES 4-CYCLE • AIR-COOLED

K90.....	2.5 to 3.6 H.P.
K160.....	3.6 to 6.6 H.P.
K330.....	7 to 12 H.P.
K660.....	12 to 26 H.P.



Modern design, air-cooled Kohler Engines in sizes from 2.5 to 26 H.P. offer a power range to fit all applications requiring a reliable and economical power source.

Kohler branch offices are located in sixteen principal cities. Sales and service distributors, throughout the country, have parts available, are ready to assist you in selecting a Kohler Engine best suited for your requirements. Write for information.



High-voltage magneto insures snappy, all-weather starting. Efficient cooling at all operating temperatures and speeds. Engineered and made by Kohler, internationally known for quality products.



Kohler Co., Kohler, Wisconsin -- Established 1873

KOHLER OF KOHLER

PLUMBING FIXTURES • HEATING EQUIPMENT • ELECTRIC PLANTS
AIR-COOLED ENGINES • PRECISION CONTROLS

For more facts, use Reader-Reply Card opposite page 18 and circle No. 272

With a battery of heaters capable of producing more than 8 million Btu per hour, and with 55,000 square feet of canvas tarpaulins for covers, M. J. Boyle & Co., Chicago, Ill., was more than prepared to continue construction of the Western Avenue Reservoir throughout the Windy City's winter.

During February, March, and April of this year, when concrete for much of the roof and part of the walls of the 30-million-gallon reservoir was placed, large sections of the structure were enclosed by tarpaulins. The battery of heaters working inside the enclosure heated the forms to remove all ice and snow, then kept concrete warm as it was placed and cured. As soon as concrete was finished, it was covered with canvas—and with hay if necessary—to retain the heat.

This winter work made it possible for the facility to be completed this summer, giving Chicago its first real storage reservoir. Formerly, Lake Michigan served as a basic reservoir,

while water-treatment and pumping facilities were geared to meet peak demands. But the expansion of both the city and its suburbs, the consequent rise in peak water demands, plus the need for a water reserve in case of emergencies, make it more economical for water to be stored at several locations.

Located at 49th and Western Boulevard, adjacent to the Western Avenue pumping station, the first of the new storage facilities is an underground rectangular tank, 303 feet wide, 537 feet long, and 26 feet high. It has an 11-inch reinforced-concrete floor, 18-inch exterior walls, and a 9-inch roof slab with drop panels and capitals. Columns 18 inches in diameter support the roof, which is covered with 2 feet of earth fill and 6 inches of black soil.

Excavate with draglines

Excavating more than 120,000 cubic yards of blue clay for the reservoir

BUILD A FIELD OFFICE IN 3 Man-Hours



PERMANENT but PORTABLE union-built construction buildings of finest kiln-dried, tongued and grooved West Coast lumber. No foundations needed. Sections bolt together quickly for strong, rigid, on-the-job service. Easily dismantled and moved. Buildings come complete with wooden floor, skids, roofing, doors, windows, hardware and prime-coated exterior.

ECONOMY Construction Buildings are available in many sizes to satisfy any space requirements. Three buildings in picture L to R 14x33' (\$1034.00), 14x26' (\$818.00), 10x12' (\$347.30) F.O.B. West Chicago, Illinois.

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ECONOMY BUILDINGS INC. (SINCE 1922)

For more facts, use Reader-Reply Card opposite page 18 and circle No. 273

West Chicago 22, Ill.
Phone 797

CONTRACTORS AND ENGINEERS



Steam rises from the heated concrete as it is dumped from Gar-Bro buggies to be consolidated by Homelite electric vibrators. Concrete temperatures sometimes fell from 75 to 40 degrees, but rose again as the material was covered.



Where pours are inaccessible to the Bucyrus-Erie 51-B crane, ready-mix concrete is swung to a double-gated hopper that loads concrete hand buggies. The remainder of the pour was handled directly by the crane.

was a four-month job for Russell Bros., Chicago, which used two Lorain draglines with Owen and Page two-yard buckets. The draglines loaded the material into a fleet of 12 to 20 large trucks that hauled to a disposal area approximately five miles away.

A complicating factor in the excavation was the removal and replacement of the existing 48-inch cast-iron water main that crossed a section of the new reservoir site to feed the Western Avenue pumping station. A new line had to be laid around the reservoir site and connected to the existing pumping station before the old line could be removed.

As the old pipe was uncovered, it was carefully sand blasted, painted with Inertol 49 protective paint, and stored for re-use. About 805 feet of the pipe was salvaged and this was later used between the pumping station and the new reservoir to provide the supply and drain lines for the reservoir.

Crane places floor, walls

Concrete for the 11-inch reinforced floor was delivered in ready-mix trucks that drove down an incline into the excavation to make their deliveries. Because of the large amount of reinforcing steel used in the floor, however, the trucks could not get close enough to the point of placement to dump their concrete directly into the forms. A Link-Belt crane used a 1-yard bottom-dump bucket to swing the concrete from the trucks to the floor.

The floor was laid off and poured in 8-foot-wide strips, and vibrating screeds spanning the strips were used

(Continued on next page)

FULL RANGE VISION

THE NEW UNIT Challenger
... as a TRENCHOE

ALL-WELDED BOOM with Gooseneck Design for Deep Digging

FAST on the Job...EASY to Handle!

Added to the UNIT line of proven equipment, is the New UNIT CHALLENGER. Here's a modern $\frac{3}{8}$ -yard machine that provides a perfect combination of design and construction. Packed with new advanced engineering features: Self-aligning Hook Shoes... Force Feed Lubrication... Full Floating Trunnion-Mounted Tapered Drums... Torque Converter, etc., the New UNIT CHALLENGER is the most dependable machine that money can buy.

Bulletin C-800 completely describes and illustrates the New UNIT CHALLENGER.

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"WORKS ALL OVER SITE AS A UTILITY CRANE"
—Gull Contracting Co.

SILENT HOIST KRANE KAR

POWER STEERING
FLUID DRIVE

1½, 2½, 5, 10, 12½ ton cap. Gas or Diesel; 9 to 37 ft. Booms or Adjustable Telescopic Booms; Solid or Pneumatic Rubber Tires; Magnet, Bucket, All-Weather Cabs available.

Contractors report big savings in time, manpower, and money with highly maneuverable KRANE KAR Swing-Boom Mobile Crane. Handles steel and concrete forms, lumber, buckets, cement, etc., storing incoming materials and delivering them where needed. Transports heavy burdens up and down ramps. Loads and unloads trucks. Great for maintenance of and as an auxiliary to bigger cranes. Ask for Bulletin #90.

USERS: Turner Construction, Dominion Bridge, Kellogg Co., Johns-Manville, Sordoni Construction, Concrete Pipe and Products, Lock Joint Pipe, A.E.C., Baker Construction, Bethlehem Steel, Consolidated Edison of N. Y.; Merritt, Chapman & Scott; DuPont.

SILENT HOIST & CRANE CO.
Pioneer Mfrs. of Heavy Duty Materials-Handling Equipment
898 A 63rd ST., BROOKLYN 20, N.Y.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 274



Snow begins sticking to the ground, but a Bucyrus-Erie 51-B backhoe continues excavating for the 48-inch pipeline connecting the reservoir and the Western Avenue pumping station, background. *C&E Staff Photos*

(Continued from preceding page)

to strike off the concrete. Hand finishing with wood floats completed the slabs.

The 16-foot wall forms, with their height of 26 feet equal to the height of the walls, were prefabricated in the carpenter shop and set by a crane. The panels were made up of $\frac{3}{4}$ -inch plywood facing, backed by 3×4 studs and double 2×4 wales. They were tied together with Superior form hardware that used both the snap ties and the cone ties.

Erection and stripping of the forms,

as well as the placing of reinforcing steel, was handled by Gateway Engineering Co., Chicago. For this job, it used a Michigan Model TLDT20 truck-crane that handled the heavy form sections easily. Four of the 16-foot panels were assembled in a unit to form each side of a 64-foot section constituting one pour. Servicised double bulbous rubber waterstop was placed in the vertical construction joint at each end of the 64-foot sections. No waterstop was used in the floor or roof of the reservoir.

The crane-and-bucket method was used to transfer concrete from ready-mix trucks to wall forms, but long before this job had been completed, the first snow fell and the work had to continue through the winter. Tarps were used to protect the wall pours, and salamanders provided heat as needed.

Build roof in winter

By midwinter, enough of the walls had been placed so that the deck could be started. The first section formed was 79 feet wide and ran across the 303-foot width of the reservoir at the east end. Roof forms were supported by towers of Patent tubular steel scaffolding. These towers had legs that were adjustable at the bottom, making it relatively easy for workmen to set the towers plumb, even on the sloping floor around the edges of the tank.

Special brackets at the top of the towers held 2×10 stringers that spanned between the scaffold legs to provide longitudinal support for the forms. On these stringers, 4×4 joists were laid loose at about 18-inch centers. The $\frac{3}{4}$ -inch plywood decking was laid over the joists and lightly nailed. This form system was built swiftly, remained strong and rigid, and was very easy to strip.

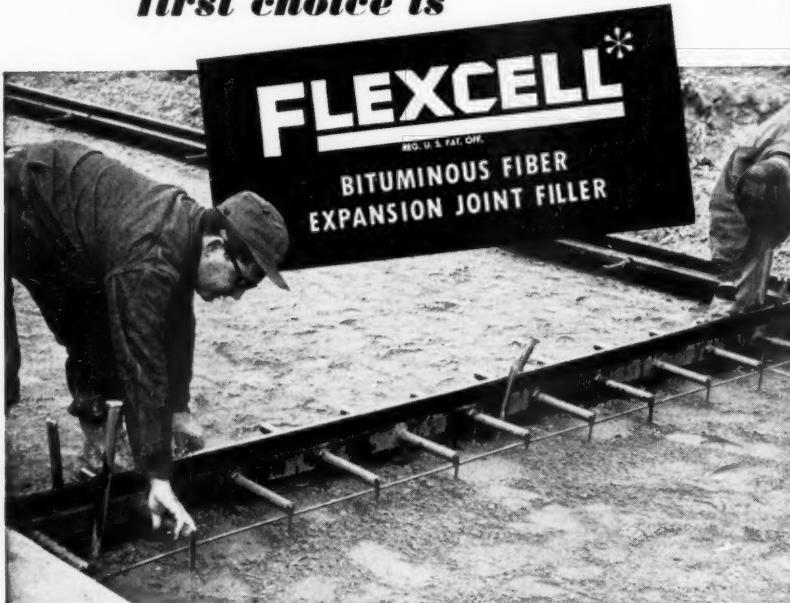
Boyle had enough scaffolding and form materials on the job to form 30,000 square feet of deck at a time. This permitted workmen to continue erecting forms while concrete was being placed in forms already set.

As the forms were completed for the first 79-foot strip and the reinforcing steel placed, the entire deck was covered with canvas. Tarpaulins were also hung along the open side so that the area under the form was completely enclosed. A total of 55,000 square feet of canvas—46,000 feet of it new on this job—was available for this purpose.

Inside the enclosure, the contractor installed 40 Hy-Lo oil-burning salamanders and four Clayton oil-burning portable space heaters. The salamanders were rated at 175,000 Btu each and the Clayton heaters at 300,000 Btu each, making the total heating capacity in excess of 8 million Btu per hour. The heat from below soon warmed the deck forms and melted all the ice and snow that had accumulated, permitting concrete placement to begin.

Before the deck was started, how-

Across America... wherever concrete meets concrete... first choice is



On bridges and airport runways, on streets, highways, throughways, and expressways... wherever concrete meets concrete... Flexcell Bituminous Fiber Expansion Joint Filler is doing a job! For joints that are free from bulges or crevices, that stay closed under severest traffic and climatic conditions, Flexcell Filler has won coast-to-coast acclaim.

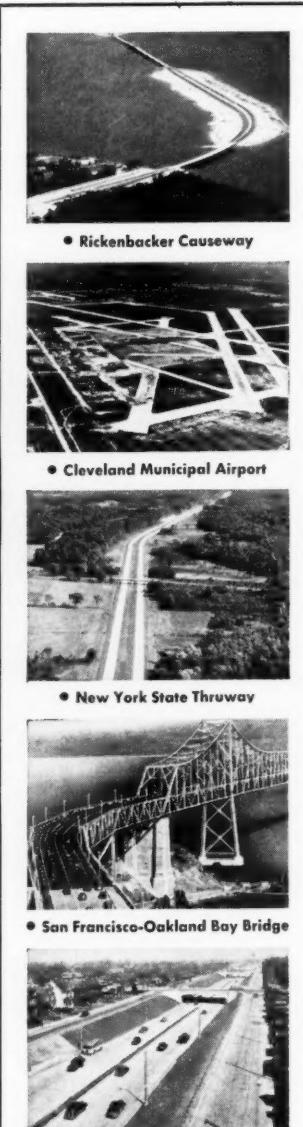
In years of trouble-free performance on thousands of projects, Flexcell Joint Filler has proven a cost-saver in both initial expense and freedom from maintenance. Its secret lies in the resiliency of the tough, durable cane fiber board base. Millions of tiny air cells absorb pressure without extruding as concrete expands. When concrete contracts, Flexcell Joint Filler springs back to normal, keeping joint neatly and smoothly closed.

Simple to handle, easy to work with, Flexcell Joint Filler provides neat, finished

joints without trimming. It is impregnated with asphalt to resist moisture, and protected by the patented Ferox® Process against dry rot and termite attack. Rough-textured surface means a firmer bond with concrete; it is ideal for work involving special cutting, tapering and fabricating. And over 70% "recovery" has been proved in laboratory tests!

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Mail the coupon below for full data on the benefits and economies of using Flexcell Joint Filler for pavements, runways, sidewalks, curbs, gutters, driveways, concrete floors. No cost or obligation.



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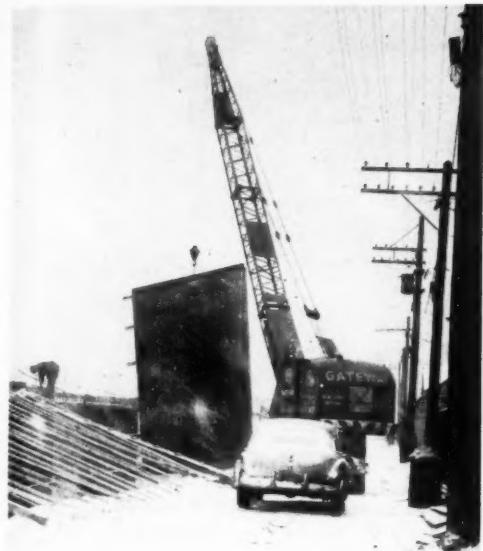
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For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 276



Whipping snow fails to stop a Michigan Model TLDT20 truck-crane from placing the 26-foot-high wall forms for the reservoir. Four 16-foot panels, assembled in a unit to form each side of a 64-foot section, constituted one pour.

by a Homelite generator before being struck off with a screed and finished with wood floats. Since the crane was unable to reach all parts of the form, the most remote sections were placed first with this method.

As areas beyond the reach of the crane were completed, the runways were removed and the crane picked the hopper off the deck. The remainder of the pour went swiftly, since it was made directly from the bucket. As soon as the concrete had been finished, the canvas was rolled back over the slab to hold in the heat. Whenever necessary, hay was used as an additional insulator.

On cold or windy days, the surface temperature of the concrete dropped from the 75 degrees at which it had been placed to the low 40's. But as the

concrete was covered and began to set up, the temperature rose. Even with these precautions, it was possible to place concrete only when the outside temperature stood at 20 degrees or higher and when the forecast indicated rising temperatures.

The concrete used on the reservoir was a 5 1/4-bag mix using 1 1/2-inch maximum aggregate. Because of the shortage of cement during the time the tank was under construction 1/2 bag of fly ash was substituted for an equal amount of the cement in the mix. Darex air-entraining agent was added.

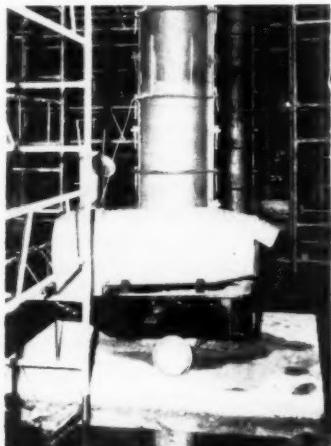
Personnel

The design of the reservoir was done in the Chicago Department of Public Works under the direct supervision of George S. Salter, chief filtration engineer.

ever, the cylindrical 18-inch columns were poured in sectional steel forms. The sections, about three feet long, were made in two pieces so that they could easily be assembled around the reinforcing cages and locked together. The light sections were also easy to strip and move to new locations. The special steel forms for the column capitals were set in place from the deck. Columns were allowed to set at least two hours before concrete was poured on the deck above.

To make concrete placement convenient, the contractor divided the 303-foot section of forms into four approximately square areas, one of which could easily be poured in a day. When the concrete work was ready to begin, the canvas covering was removed from the first section to be placed—the section in the northeast corner—and heated concrete was poured in the warm forms.

Allied Concrete Supply Co. delivered the ready-mixed concrete to the job in Rex 7 1/2-yard agitators mounted on Mack trucks. A Bucyrus-Erie 51-B crane with a 1 1/2-yard Insley laydown bucket hoisted the concrete from the trucks to a double-gated hopper on the deck so that workmen could fill Gar-Bro buggies and wheel them over runways to the area where concrete was being placed. The mix was worked down into the forms and around the reinforcing with the aid of Homelite electric vibrators powered



One of four Clayton oil-burning space heaters on the job helps heat the enclosed area beneath the deck while a pour is in process.

THIS TOO, IS JOB INSURANCE!

WINCH PULLING POWER IS YOUR JOB INSURANCE

Winch equipped CAT D8 tractor assists scraper through heavy mud.

A HYSTER TOWING WINCH ON MY CATERPILLAR-BUILT TRACTOR PROTECTS ME AGAINST... LOSS OF { TIME PRODUCTION PROFITS

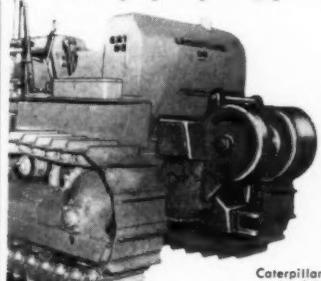


- Naturally, I insure myself against all possible losses on all of my contracts. But I consider the price of my Hyster Winch the cheapest insurance premium I've ever paid.

Here's Why: Profits slide down fast when bogged-down equipment causes lost time and production. I cut this loss to a minimum by keeping the job moving with the all-purpose pulling power my Winch provides. At

the same time I am reducing wear and tear on my tractor because the Winch is designed specifically for heavy pulls greater than the tractor drawbar pull.

Thousands of tractor owners have found that the Job Insurance provided by *Winch-pulling power* pays big dividends. For all the facts, call your Caterpillar Dealer (he is also your Hyster Dealer) or write Hyster Company, 2952 N. E. Clackamas St., Portland, Oregon, or 1852 N. Adams Street, Peoria, Illinois.



D8D TOWING WINCH

All Hyster Winches are designed for "balanced, matched performance" with Caterpillar-built Tractors. . . . When you operate a Caterpillar-Hyster "Machine Package" you know you are getting your money's worth.

Caterpillar and Cat are registered trademarks of the Caterpillar Tractor Co.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 277

HYSTER COMPANY

A full line of Winches
for Caterpillar-Built
Tractors



tion engineer. George DeMent is commissioner of the department and Dick Van Gorp, chief engineer. Assistant chief engineer in charge of construction was J. Walter Grimm. The construction work was under the direct supervision of resident engineer Leonard Lynch and his assistant, Ronald Bronson.

Supervisory personnel for M. J. Boyle & Co. included C. L. Sogge, general superintendent; Fred Rasmussen, project superintendent; and J. O. Flannigan, assistant superintendent. Field offices for the contractor and the city engineers were two fully equipped Mobile-Office trailers.

THE END

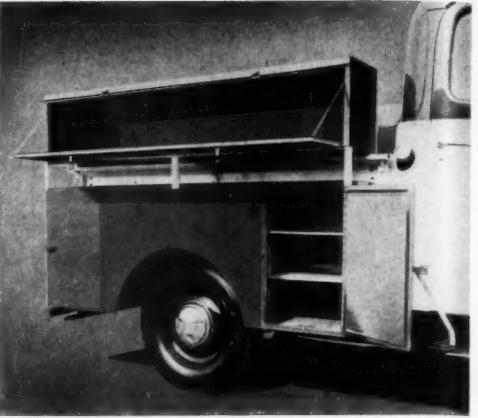
Aircraft spotters are needed by civil defense. Volunteer today.

Ice control spreader

■ The Model C Hydro-Spreaders, a one-man-operated unit for ice control and seal coating, is described in a bulletin from Central Engineering Co., Inc. Material such as sand, calcium chloride, and cinders can be spread in widths of from 9 to 35-feet. Installation and operational diagrams are accompanied by details on the working parts of the truck-mounted spreader. Information on optional equipment is also included in the bulletin.

To obtain Bulletin H-3 write to Central Engineering Co., Inc., 4429 W. State St., Milwaukee 8, Wis., or use the Request Card that is bound in at page 18 of this issue. Circle No. 101.

The Wilhelmsen all-steel tool box fits standard pickup trucks with a minimum of rear-view interference.

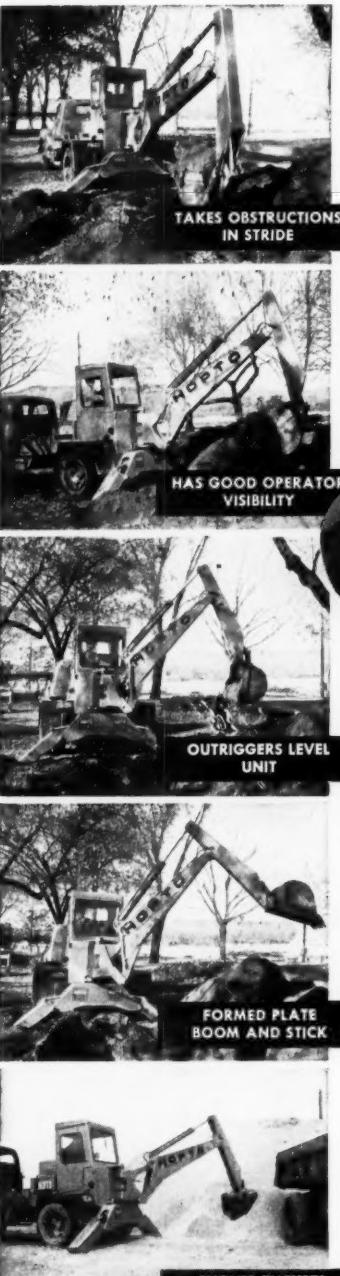


All-steel tool boxes add to truck capacity

■ All-steel tool boxes designed to fit standard pickup trucks are available from the Wilhelmsen Sheet Metal Works. The units are said to give complete protection against theft and weather, while providing an accessible place for small hand and power tools.

The boxes are available in $\frac{1}{2}$ and $\frac{3}{4}$ -ton models with single or double doors. The smaller unit measures $13 \times 15 \times 71$ inches and the larger is $13 \times 15 \times 84$ inches. They can be installed with a minimum of rear-view interference.

For further information write to the Wilhelmsen Sheet Metal Works, 4459 $\frac{1}{2}$ Tweedy Blvd., South Gate, Calif., or use the Request Card at page 18. Circle No. 108.



NEED A WORK-HUNGRY, EASILY OPERATED DIGGER?... SHOVEL?... CRANE?

HOPTO

is YOUR
LOW-COST ANSWER!



completely
hydraulic

Here's the fast cycling, 200° swing, completely hydraulic digger-shovel-crane that reaches out for work! HOPTO has a $16\frac{1}{2}$ ' reach at ground level beyond the boom mounting; digs more than 11' deep and dumps at $9\frac{1}{2}$ ' with backhoe and 11' with shovel bucket!! It's the easy-to-operate unit your handy man will handle like a veteran in half a day!

HOPTO mounts on any ton-and-a-half or larger truck. Hydraulic outriggers level unit and take load from truck chassis and springing mechanism! Feather-touch controls in the full visibility cab actuate every movement of unit and outriggers. No belts, pulleys, cables or sheaves on a HOPTO! It's completely hydraulic!

The 1500 PSI hydraulic system has overload relief valves, double wire braided hoses, 5" inside diameter hydraulic cylinders with $2\frac{3}{8}$ " chrome plated piston rods, and a large oil reservoir for most efficient operation! Self aligning bearings and hardened alloyed steel pins... formed steel plate boom, stick, and sub-frame... direct mounting of pump on power unit... crowd cylinder above boom... these are but a few of the many long-life, low-maintenance features of the quarter-yard, work hungry HOPTO.

Write for complete information on the model or models for your requirements



MANUFACTURERS OF A COMPLETE LINE OF $\frac{1}{2}$ YARD AND $\frac{1}{4}$ YARD HYDRAULIC DIGGER—SHOVEL—CRANE

BADGER MACHINE COMPANY

1124 WEST 5TH STREET • DEPT. E • WINONA, MINNESOTA

For more facts, use Reader-Reply Card opposite page 18 and circle No. 278

Hopper conveyor line

■ Three models of hopper conveyors manufactured by the Power-Pack Conveyor Co. are pictured and described in a catalog. Model 600, with a capacity of 3 tons per minute, is designed to fill trenches and curbing up to 7 inches in height. The catalog claims a 36-inch-long strikeoff box, adjustable on three sides to a height of 6 inches above grade, is the main feature of the Model 605. The prime function claimed for the Model 610, which is equipped with a 48-inch tandem conveyor, is backfilling 24-inch high curbs. Specifications, dimensions, weights, and job photos accompany the data on each model.

To obtain Catalog No. HC-56 write to Power-Pack Conveyor Co., 13910 Aspinwall, Cleveland 10, Ohio, or use the Request Card at page 18. Circle No. 104.

Earthmover accessories

■ The equipment available for the Caterpillar DW20 wheel tractor is featured in a booklet. Job photos show scrapers and bottom and side-dump wagons used with the DW20. Brief descriptions and specifications accompany pictures of each machine. Charts and graphs provide information on the performance of this matched equipment. The booklet is also available in French, Spanish, and Portuguese editions.

To obtain Form No. DE6150 write to the Caterpillar Tractor Co., Peoria, Ill., or use the Request Card that is bound in at page 18 of this issue. Circle No. 180.

CONTRACTORS AND ENGINEERS

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International character of winter concreting shown at Denmark meeting

The growing importance of winter construction—and winter concreting in particular—was underlined by this year's winter concreting symposium in Copenhagen, Denmark. Arranged through the Danish section of the International Meeting of the Testing and Research Laboratories on Materials and Construction, the congress was attended by about 270 concrete technologists from 22 countries. About 70 members took part in the discussions, and specialists from 12 countries sent contributions as pre-prints to members of the symposium.

The importance of climatic conditions during winter concrete work was discussed by E. G. Swenson, Ottawa, Canada, at one of the sessions. It was brought out at this time that weather-predicting services had been established for the use of builders in a number of countries, and that information supplied by these services was satisfactory. The influence of temperature on the development of strength and frost resistance of concrete was discussed by Professors Inge Lyse, Trondheim, Norway, and Georg Waestlund, Stockholm, Sweden.

In another session, T. C. Powers of Chicago, Ill., gave a survey of the Portland Cement Association's latest results of basic research concerning the durability of concrete. His survey pointed out that air entrainment appeared to be of great use for hardened concrete exposed to frost and for green concrete.

Methods that can be used to secure an adequate quality of winter concrete were reviewed by Dr. A. Voellmy of Zurich, Switzerland. B. Kelopuu, Helsinki, Finland, presented material and job-site methods for winter concrete work.

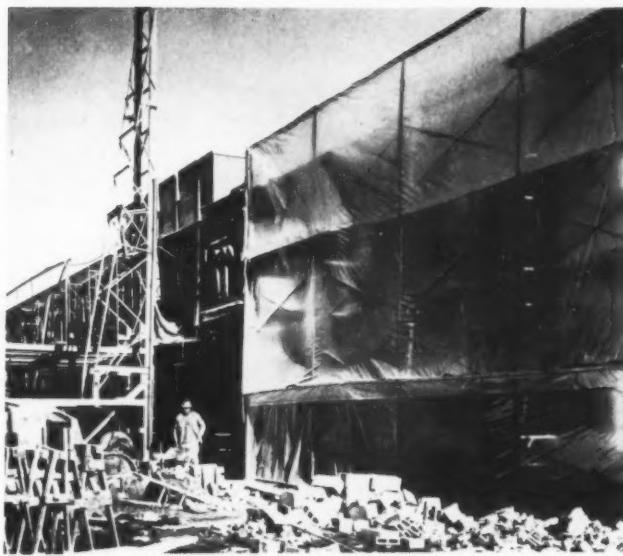
All of the addresses, pre-prints, and a chapter on the most important conclusions reached at the congress are being compiled in book form and will be published as "Proceedings" of the sessions. When copies are off the press, they will be available from The Organizing Secretary, RILEM Symposium, 1956, The Danish National Institute of Building Research, Borgergade 20, Copenhagen K, Denmark.

Non-shrink grouting

■ Specifications for the non-shrink grouting of heavy equipment, anchor bolts, building columns, and bridge seats are available from The Master Builders Co. Recommendations are given on grouting and storing materials, mixes in relation to clearance, and mixing, forming, preparing, placing, and finishing the grout. Details are included on eliminating settlement and drying shrinkage, grading of aggregates to minimize bleeding, strengths, and mixing method and time. Data is also included on specifications for non-shrink grout.

To obtain the literature write to The Master Builders Corp., 7016 Euclid Ave., Cleveland 3, Ohio, or use the Request Card at page 18. Circle No. 67.

VISQUEEN TRANSPARENT POLYETHYLENE FILM was draped over virtually the entire shell of the new Metal Thermid Corp. building in Rahway, N. J., to permit painters, plasterers, plumbers, and other workmen to finish the plant interior, even during winter weather extremes. The use of the film, along with gas salamanders, kept the interior temperature at a comfortable 60 to 70 degrees while the outside temperature hovered around the freezing mark. According to the Ferguson Construction Corp., builder of the plant, the use of Visqueen film tarpaulins enabled the company to finish the job without any loss of time due to cold weather. For more information write to **The Visking Corp.**, 75 E. Wacker Drive, Chicago, Ill., or use the Request Card at page 18. Circle No. 30.



BIG-Without BULK!

New 900 cfm

Here's a 900 cfm portable compressor that is only 12 feet long—that has a 14'10" turning radius—that is ruggedly built of high-strength steel—yet weighs as much as 3700 pounds less than other 900 cfm portables.

The new Joy 900 cfm AIRVANE rotary tow and maneuverers like ordinary 600 ft. machines, yet packs enough punch to power three heavy wagon drills . . . or seven light wagon drills . . . or ten hand-held drills.

AIRVANE **Rotary**

If a 900 ft. portable is in your plans to push along a tough job, better look at the latest—then put a JOY on the job.

Write today for full information. **Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa.** In Canada: **Joy Manufacturing Company (Canada) Limited, Galt, Ontario.**

Write for FREE Bulletin 129-21

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FOR OVER HALF A CENTURY

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PORTABLE HOISTS • FANS • BLOWERS • TUNNEL,
QUARRY, MINE EQUIPMENT

For more facts, use Reader-Reply Card opposite page 18 and circle No. 279



Silent Glow portable recirculating heaters are available in models furnishing 120,000, 200,000 (left) and 300,000 Btu.

Portable heaters offered for variety of operations

■ Three sizes of a portable, recirculating heater, with outputs of from 120,000 to 300,000 Btu, are announced by the Silent Glow Oil Burner Corp. The heater is recommended for use in spot and space heating, preheating, thawing, dehydrating, and drying and curing operations.

The Silent Glow Model 120 Cub portable heater measures 36 x 15 x 27 inches and weighs 98 pounds. The Model 200 is 43 x 18 x 31 and weighs 150 pounds. The 195-pound Model 300 is 44 x 21 x 39 inches in size. The models furnish 120,000, 200,000, and 300,000 Btu, respectively.

For further information write to the Silent Glow Oil Burner Corp., 850 Windsor St., Hartford, Conn., or use the Request Card that is bound in at page 18 of this issue. Circle No. 16.

Line of taper-socket drill bits announced

■ A new line of taper-socket drill bits has been announced by Brunner & Lay, Inc. The new Rok-Bits are available in both No. 7 Class A and No. 8 Class B tapers.

The Class A taper is for $\frac{1}{8}$ -inch drill steel, while the Class B fits 1-inch steel. The Rok-Bits for the



With Brunner & Lay taper-socket Rok-Bits there are no threads to be stripped.

smaller steel come in $1\frac{1}{4}$, $1\frac{3}{8}$, and $1\frac{1}{2}$ -inch sizes. The bits for the larger steel are available in $1\frac{5}{8}$ and $1\frac{3}{4}$ -inch diameters.

Bronze shims are supplied with each bit. According to the manufacturer, the taper-socket drill bits are superior to the threaded type because there are no threads to strip, no body distortion results from lock-on, and the bit is more easily removed from the drill steel.

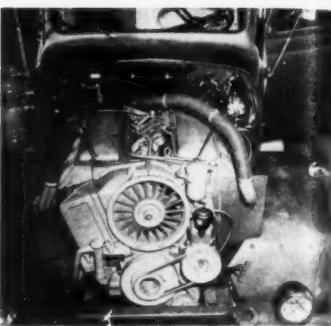
For further information write to Brunner & Lay, Inc., 9300 King St., Franklin Park, Ill., or use the Request Card that is bound in at page 18. Circle No. 7.

Air-cooled diesel powers 4 and 6-wheel-drive rigs

■ Deutz V-8, air-cooled, diesel engines are now being used as power plants on 32,000 through 40,000-pound four-wheel-drive trucks and 36,000 through 40,000-pound six-wheel-drive units manufactured by the Four Wheel Drive Auto Co.

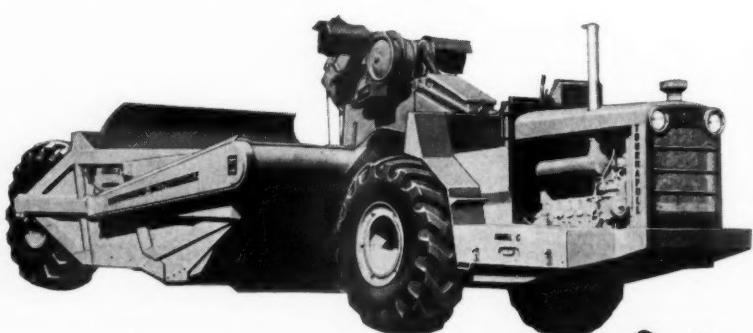
According to the company, the 170-hp rating and high torque range of the Deutz engine, plus its elimination of a liquid coolant and its ease of maintenance, make it especially adaptable for FWD's heavy-duty trucks in the construction and highway maintenance fields.

Because of the engine's lugging



The Deutz air-cooled diesel in an FWD four-wheel-drive truck.

power at lower speeds, it is possible to utilize the Deutz engine on FWD's which have five-speed transmissions, the company states. FWD's with



C FULLPAK SCRAPER — A new proved scraper for the time-tested C Tournapull prime-mover. Lower, wider bowl... boils better... loads faster... fills corners... heaps 18-cu. yd. payloads. Low push-blade delivers direct line thrust of pusher to sharpening blade for maximum cutting power.

TWIN-C TRACTOR — World's most powerful and fastest push-tractor... gives larger loads in shorter loading time. 416 hp 4-wheel drive give 65,900 lbs. "draw-pull". Rubber-tired speed, power steer, quick line-up for direct-line push. Twin torque-converter speeds match loading speed of modern rubber-tired scrapers.



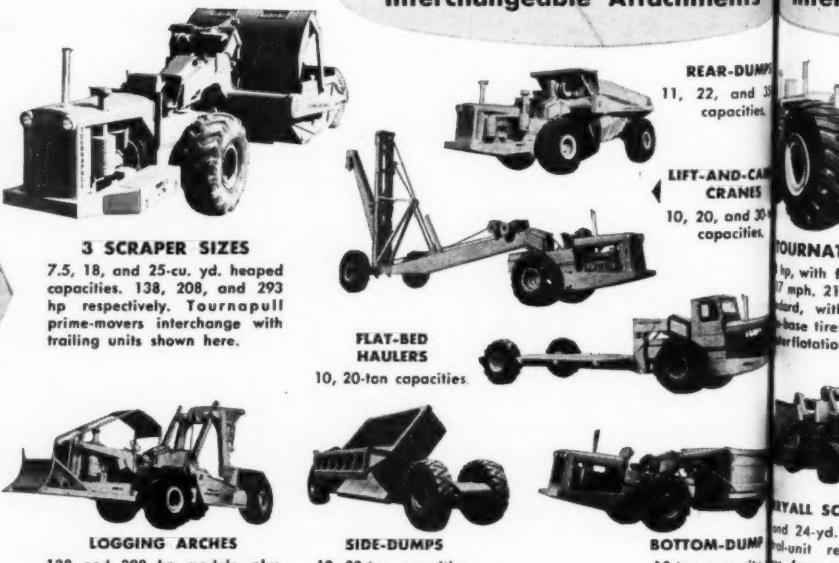
220 ADAMS GRADER — Handles same wide variety of work, within its power and weight range, as the larger Adams machines. 60 hp diesel engine, 9 forward speeds (including 4 optional creeper gears), and simple, efficient hydraulic controls. Operator can swing moldboard to high bank cutting position on either side of grader without leaving his cab position.

New in '56

Earthmoving today is not what it was a few years ago. Today's jobs... bigger in yardage, include wider areas... time-limits for job-completion... shorter... labor costs are higher... competition is keener. You should have these conditions in mind when figuring new work. With today's accelerated activity in highway construction, it will pay you now to analyze your present equipment in the light of future requirements.

To capitalize on the expanding opportunities ahead, you will need to consider machines that work faster... travel faster...

Scrapers and Interchangeable Attachments



3 SCRAPER SIZES
7.5, 18, and 25-cu. yd. heaped capacities. 138, 208, and 293 hp prime-movers interchange with trailing units shown here.

FLAT-BED HAULERS
10, 20-ton capacities.



LOGGING ARCHES
138 and 208 hp models, plus 260 hp unit with rear-wheel electric assist for steep grades.

SIDE-DUMPS
10, 20-ton capacities.

Note: Bulldozer and Snow-Plow available for use with 7.5-yd. D Tournapull.

LeTourneau-Westinghouse also manufactures:
Power-Control-Units, Rooters, Sheepfoot Rollers, Jib Cranes, and Tournapole from $\frac{1}{4}$ " to 1".

Tournapull, Tournatractor, Angledozer, Tournarope—Trademark Reg. U.S. Pat. Off.
Adams, Rooter, Fullpak, Twin-C, SwitchMobile, SwitchTractor—Trademark G-1093-G

Deutz power plants are said to be able to pick up speed and move their loads at from 1,200 to 1,300 rpm in all types of operations.

For further information write to the Four Wheel Drive Auto Co., Clintonville, Wis., or use the Request Card at page 18. Circle No. 9.

Aluminum ladders

■ Aluminum single and extension ladders for light and heavy construction use are featured in a mailing piece from Patent Scaffolding Co., Inc. The literature claims that the ladders are resistant to rust, rot, mildew, and corrosion. The single ladder is, according to the specifi-

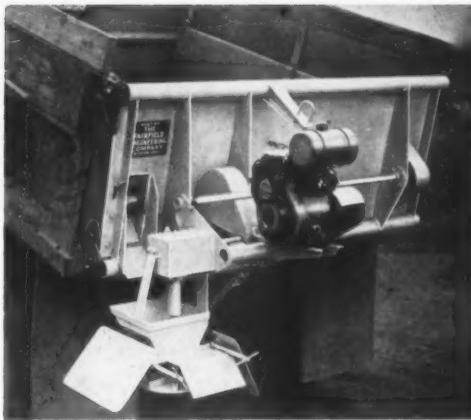
cations, available in sizes from 8 to 20 feet; and the extension ladder, in sizes from 16 to 40 feet.

To obtain the mailing piece write to Patent Scaffolding Co., Inc., 38-21 12th St., Long Island City 1, N.Y., or use the Request Card at page 18. Circle No. 75.

Detroit Diesel names

The Detroit Diesel Engine Division of General Motors Corp., Detroit, Mich., has appointed Eugene F. Kelly to the position of works manager. Formerly with the firm's Allison Division, Kelly succeeds Clyde W. Truxell, who has been named general manager of the Detroit Diesel Division.

The Fairfield material spreader places from 500 to 1,400 pounds of salt or from 1 to 4 cubic yards of grit per mile.



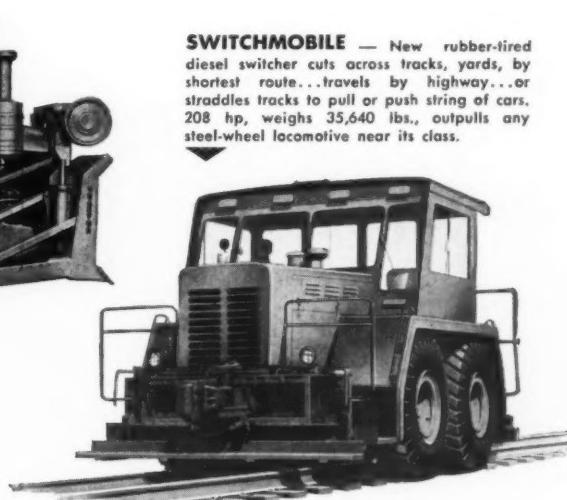
Material spreader fits 3-yard tail gate

■ A material spreader that is recommended for placing salt, sand, and cinders has been announced by The Fairfield Engineering Co. The unit will fit any standard 3-cubic-yard dump body tail gate.

All controls for the spreader are located in the truck cab and manipulated by the driver, making the spreading operation a one-man job. Adjustable baffles are provided at the distributor disk to control the spread width.

The unit will spread material over two highway lanes and can also throw the material forward (by removing the front baffle) in order to obtain better traction. The rig will spread from 500 to 1,400 pounds of salt or from 1 to 4 cubic yards of grit per mile at speeds of from 10 to 25 mph.

For further information write to The Fairfield Engineering Co., Marion, Ohio, or use the Request Card at page 18. Circle No. 32.



to help you handle more earthmoving contracts and make bigger profits

ot what and operate at high mechanical efficiency. The new 1956 machines offered here meet these requirements. In addition to the higher example, the new C Fullpak pusher, with lower and wider bowl, can move 18 cu. yds. fast...travels at today's speeds to 30 mph...saves valuable time on load, haul, spread, and return. The seconds it saves mean profits for you.

The new Twin-C Tractor...world's most powerful pusher...also warrants your consideration. Its 80,000-lb. 416 hp push helps big scrapers get bigger

loads, in less time. It allows you to take advantage of the speed built into today's big modern scrapers...giving more yardage than any other pusher.

Another product, new in '56, is the Adams 220 motor grader. Use this high quality but competitively-priced grader for light grading and clean-up duties, freeing your larger graders for heavy-duty assignments.

Every one of these new dirtmoving tools in the extensive LeTourneau-Westinghouse line reflects years of constant development. All give you

new production and profit opportunities well worth investigation.

In planning for your future, isn't it a good idea now for you to analyze your equipment needs to meet the new opportunities ahead.

Ask for specifications and pictorial literature on these new units. We'll be glad to arrange for demonstrations on your job, or take you to owners where you may see these machines in action. Write the factory now, or visit your nearby LeTourneau-Westinghouse Distributor.

Adams Graders and Loaders



5 GRADER SIZES
60, 80, 104, 123, and 150 hp.
Four larger sizes have 8 forward speeds to 26 mph, 4 reverse speeds to 13 mph.

SNOW-PLOW AND WING

Available as grader attachments, also "Snow-Blo" attachment for wing.



V-TYPE SCARIFIER
Plows dirt and moves it up conveyor for casting or loading. Attachment for Adams 440, 550, 610, 660 graders, and Cat 12.

Note: Power-Shift moldboard, Rotary Snow-Plow, and Bulldozer available for Adams graders.



TRAVELoader
Self-propelled, belt-type machine for picking up and loading loose material into trucks from windrow or stockpile. Available for Adams graders.

Tractor and Interchangeable Attachments



TOURNATRACTOR
1 hp, with forward speed of 17 mph, 21.00 x 25 tires standard, with 26.5 x 25 base tires optional, for self-traction and traction.



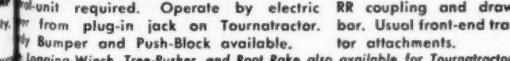
BULLDOZER
Angledozer and Root Rake, optional attachments.



SNOW-PLOW
V-type, with optional wing.



SWITCHTRACTOR
Rear-end has standard RR coupling and drawbar. Usual front-end tractor attachments.



PUSH-BLOCK
24-yd. heaped capacities. No power-unit required. Operate by electric power from plug-in jack on Tournatractor. Bumper and Push-Block available.

Logging-Winch, Tree-Pusher, and Root Rake also available for Tournatractor.

Portable radiophones

■ Four models—two in the H Series and two in the P Series—of transistorized portable radiophones are described in a catalog from Motorola. The H Series, a loudspeaker and handset model, features a dry battery pack which provides more than two days of normal operation, according to the catalog. The P Series, designed to meet the maximum portable two-way radio requirements, has a transmitter power output from 5 to 8 watts, the catalog states. Complete specifications are included.

To obtain this catalog write to Motorola Communications & Electronics, Inc., 4501 Augusta Blvd., Chicago 51, Ill., or use the Request Card at page 18. Circle No. 70.

Tension gage

■ The Swedish-made PIAB dynamometer is described in a mailing piece from the importer, The Walpole Co. The units, with a capacity up to 80,000 pounds, measure the tension, traction, and weight of objects. A list of outstanding features states that the unit is unaffected by temperature and corrosion.

To obtain the mailing piece write to The Walpole Co., 100 Boylston St., Boston 16, Mass., or use the Request Card at page 18. Circle No. 95.

For more facts, circle No. 280

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS
A Subsidiary of Westinghouse Air Brake Company

See you at the ROAD SHOW • Chicago • January 28-February 2, 1957





winter
work

Rigs ready to work at 40 below as Antarctic job nears completion

Seabees discovered that cold-weather construction was not new when they came upon this 54-year old unpainted wood house at Hut Point. Built by the Scott expedition, it is still in sound condition.

Bases established at Little America V and McMurdo Sound, and Williams Air Operation facility completed, Navy personnel are setting off again this month for the Antarctic to finish the installations that will be used by U. S. scientists during the 1957-58 Geophysical Year. Altogether, 36 stations will be established on or near Antarctica by scientists from 12 nations. (See "Winterized Equipment Wins First Round in Antarctic Battle," C&E, June, 1956, pg. 120.)

This year again, equipment designed and built specially to withstand cold weather and tough operating conditions goes along with the men in Operation Deepfreeze II. Among the million dollars' worth of machines are seven low-ground-pressure Caterpillar D8 tractors, like those which proved so effective in Operation Deepfreeze I last year.

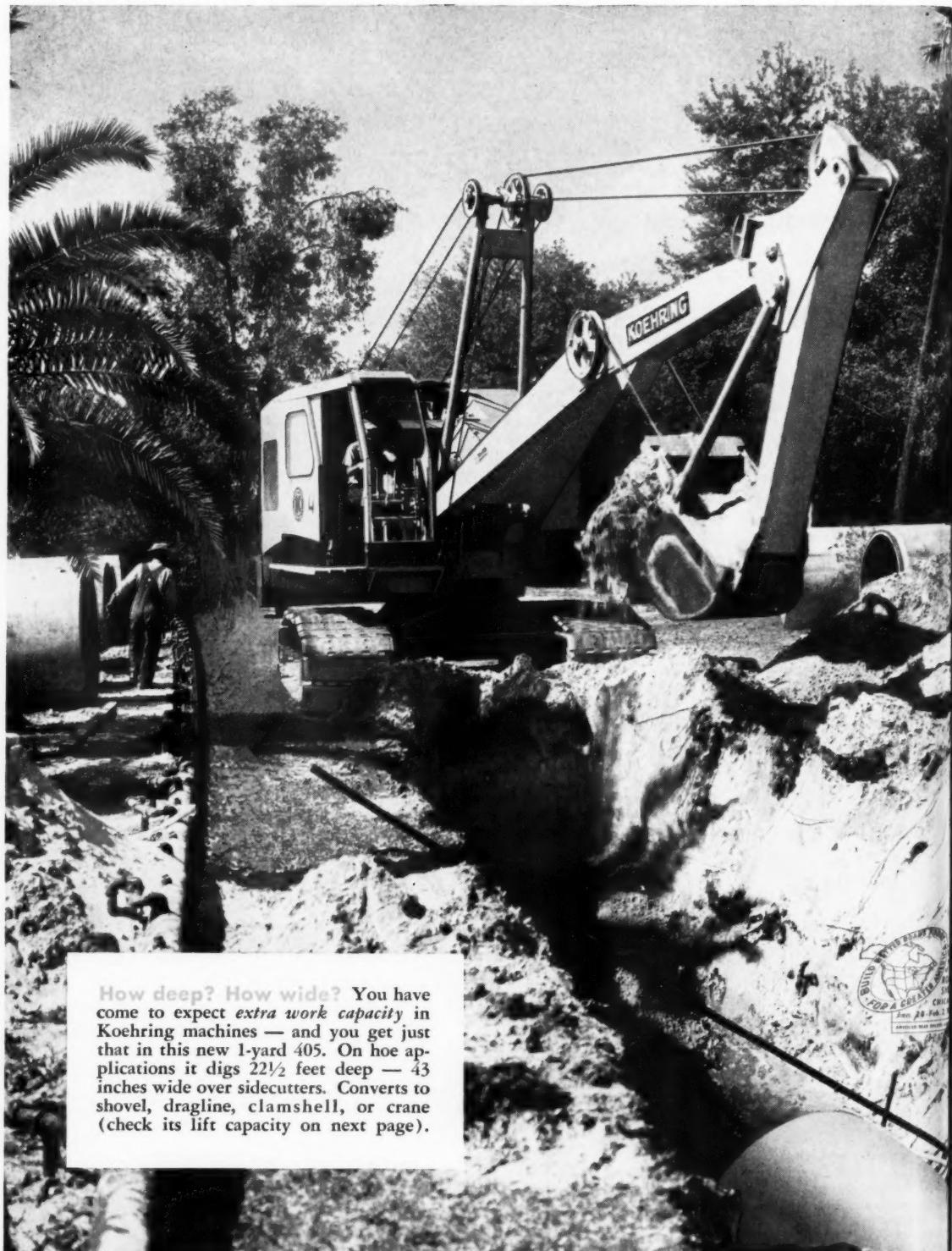
These tractors, big brothers of the D8, were produced by Caterpillar Tractor Co. after consultations with Army and Navy officials before this huge project was launched. About five feet wider and longer than the regular D8, the tractor weighs 70,000 pounds, 20,000 pounds more than its counterpart.

Despite its weight, the tractor is built with a low ground pressure of 4 psi—less than that of the standard D8—so that the machine is able to crawl over snow without getting bogged down. This feature has been achieved by building the tracks of special steel that support the weight of the heavy machine without adding to the weight themselves. These tracks are 54 inches across, as compared to the 22-inch-tracks on the regular D8.

Other features have been added so that the Cat can work in extreme cold—a special starting system, a wide catwalk, shatterproof and tinted glass with a special defroster, a powerful beam light, coat hooks, a removable glove compartment, and hydraulically operated drawbar.

Along with these tractors will go 26 Caterpillar 995 Traxcavators with low ground pressure and equipped with fork-lifts, bulldozer blades, or buckets. Two Twin Arc welders and 19 Cat electric sets generating 30 kw, will supplement the eight Cat LGP D8's, nine D2's, three D4's, and 16 Cat elec-

KOEHRING WORK CAPACITY in action . . .



How deep? How wide? You have come to expect extra work capacity in Koehring machines—and you get just that in this new 1-yard 405. On hoe applications it digs 22½ feet deep—43 inches wide over sidecutters. Converts to shovel, dragline, clamshell, or crane (check its lift capacity on next page).

KOEHRING COMPANY Milwaukee 16, Wis. Subsidiaries: JOHNSON PARSONS • KWIK-MIX

Equipment that proved itself in last year's projects is on Navy roster as Seabees start Operation Deepfreeze II

tric sets that have been held in storage through the Antarctic winter. The electric sets, which will supply power for all purposes at the bases, have engines which are interchangeable with those in the several track-type tractors so that servicing can be simplified.

Train and air drop

This year, Byrd Station, Pole Station at the geographical south pole, and three bases just added to the con-

struction schedule—Knox Coast, Weddell Sea, and Cape Adare—will be made ready for use in 1957-58.

When the Antarctic "springtime" keeps temperatures between 40 below and 40 above beginning this month, 30 men will be assigned to cross 600 miles of ice to start work on the base at Marie Byrd Land. Two 11-ton sleds, loaded with 120,000 pounds of equipment, and a 4-ton personnel vehicle, will trail each tractor in this train on the six-week trip to the base site. The



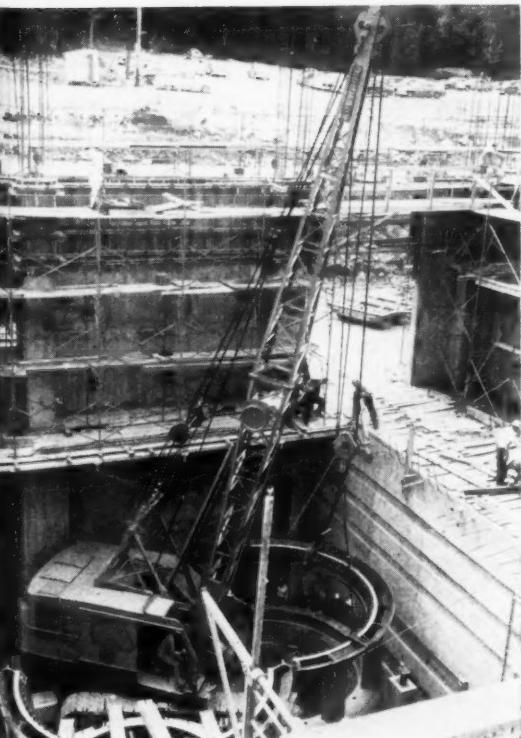
One of the LGP Cat D8 tractors, specially built for work in Antarctic cold, is unloaded from an icebreaker at McMurdo Sound. These Cats have a ground pressure of about 4 psi, enabling them to operate over snow. Official U. S. Navy Photograph

Pipeline yields right-of-way —

To lower street grade for a turnpike underpass, it was necessary to relocate this high-pressure gas line. Long sections of 8-inch steel pipe were easily lifted out of the ditch and loaded onto trucks by a Koehring 15-ton truck crane. It's equipped with a special clamp for grabbing the pipe. Travel is unrestricted on this mobile 205 truck crane. Overall width is 8 feet. Axle load distribution conforms to highway regulations in most areas — even when carrying 25 feet of crane boom over the steering end.



Flood waters backed up from a swollen river, filling this uncompleted drainage ditch — but that didn't stop the work. Contractor specializes on farmland drainage with this 305 dragline. It is a recent addition to the Koehring heavy-duty line — has all the standard attachments (more details listed below).



Down in the hole — On construction of a new powerhouse, Koehring 36-ton crane was run in through an opening in basement wall to install machinery. Here, it sets a speed-ring in place. For high lifts, up to 110 feet of straight boom can be used on this 605 crane — or, for extra reach — 100-foot boom with max. 30-foot jib.

Here are some figures that will interest you:

KOEHRING MODEL	SIZE DIPPER	LIFT CAPACITIES	
205 CRAWLER	1/2-Yd.	20,000 lbs.	at 10-foot radius
205 ON RUBBER	1/2-Yd.	30,000 lbs. 13,700 lbs.	at 12-foot radius at 20-foot radius
305 CRAWLER	3/4-Yd.	30,000 lbs.	at 12-foot radius
305 ON RUBBER	3/4-Yd.	50,000 lbs. 15,800 lbs.	at 10-foot radius at 30-foot radius
405 CRAWLER	1-Yd.	40,000 lbs.	at 12-foot radius
605 CRAWLER	1 1/2-Yds.	72,300 lbs.	at 12-foot radius
1205 CRAWLER	3-Yds.	190,000 lbs.	at 13-foot radius



Want more information? Call Koehring distributor today.

first 300 miles is a climb to the 6,000-foot Rockefeller Plateau, and the second half of the trip leads around treacherous ice chasms. During the trip, equipment will be supplied with fuel by planes making air drops just ahead of the train. According to plan, the train will proceed at a rate of 3 to 3 1/2 mph, the men working two 12-hour shifts to keep equipment constantly on the move.

Planes operating out of Williams Air Operation facility will air drop the 11 men and the needed supplies for the construction of the station at the geographical South Pole. Altogether, 100 flights will have to be made from the new airfield which, with its 8,000-foot ice runway, is capable of handling 4-engine aircraft. Maintenance shops at the field assure that these air drops will be made as smoothly as possible.

Old houses preserved

For the 163 Seabees who "wintered over" in the Antarctic this summer, the winter work will not be new. Even last year, members of the party found that cold-weather construction goes back a long way. Dr. Paul Siple, director of scientific projects for the expedition, examined three houses built on Ross Island about half a century ago by two British explorers, and declared all of them still in sound condition. He estimated that they should last another 50 to 100 years, even though the pounding of snow and rock particles had etched wood out as deep as 1/4 inch in one of the structures and two of the three were filled with snow. One of the houses was built 48 years ago by Sir Ernest Shackleton at Cape Royds. The other two were built by Capt. Robert F. Scott, one of them 45 years ago at Cape Evans and the other 54 years ago at Hut Point. The latter building is hardly the best choice of a structure for winter conditions, since it was designed for the warm climate of Australia and boasts a covered veranda. The other two are more suited to the Antarctic. One has its fir timber wall strengthened with iron cleats fitted to main posts. Both are heavily insulated, one with cork, the other with dried seaweed quilted in sack-cloth.

THE END



Trailer able to handle 10-foot-wide payloads

■ A new low-bed trailer from Talbert Trailers, Inc., has been designed for a 9-foot spread tandem assembly. The tandem assembly incorporates the Hendrickson Mfg. Co.'s tandem suspension unit.

The Model TL-25-RG-spl. can be fitted with removable outriggers for

transporting 10-foot-wide loads. Another feature is the Talbert removable gooseneck for front-end loading.

For further information write to Talbert Trailers, Inc., 7950 W. 46th St., Lyons, Ill., or use the Request Card that is bound in at page 18. Circle No. 12.

Device absorbs shocks; saves hydraulic system

■ A load-cushioning device to prevent hydraulic-system breakdowns is announced by Greer Hydraulics, Inc. The device is recommended for use on such units as bucket loaders and fork trucks adapted to bucket loading—machines that are utilized in moving heavy, shifting loads of bulky material.

The device, called a hydropneumatic accumulator, is a small steel shell containing a rubber bag which is precharged with an inert gas, usually nitrogen, at a pressure of $\frac{1}{2}$ to $\frac{1}{2}$ of the operating pressure, depending on the application. It is connected with the main cylinder circuit between the control valve and the lift-cylinder mechanism. Pulsations



The Greer hydro-pneumatic accumulator, here mounted on the fork plate of a fork truck and connected to the main hydraulic circuit, dampens or absorbs shocks which could be damaging to the hydraulic mechanism.

or shocks transmitted to the hydraulic circuit are absorbed within the accumulator shell by the contraction of the rubber bladder.

Another effect of the accumulator is to "float" the loads. The entire sequence of lift action and movement of the rig itself is made smoother, the company advises. Movement which resulted in sharp bumps without the device becomes floating motion with it, the company reports.

For further information write to Greer Hydraulics, Inc., N. Y. International Airport, Jamaica 30, N. Y., or use the Request Card at page 18. Circle No. 19.

6 reasons for a torque converter in crawler tractors

For higher work output . . . and longer equipment life, more and more contractors are ordering their crawler tractors equipped with torque converter drive.

A torque converter offers six profitable, proved advantages applicable to your crawler tractors. 1. Multiplies torque exactly as needed (three-stage units up to 6:1). 2. Engines work up in the maximum efficiency range all the time, delivering constant high horsepower output . . . doing more work than units equipped with mechanical drive. 3. Power is matched to load demands automatically, with gear shifting minimized or eliminated—where mechanical transmissions must stay in the starting gear ratio, even after starting load resistance is reduced . . . operator efficiency is boosted. 4. Heavy load pick-up is smooth, even, without clutch slippage . . . better flotation is obtained. 5. Overloads, shock loads and vibrations are cushioned out, through fluid connection . . . providing longer tractor life with less maintenance. 6. Infinite variety of ratios is available to work with, permitting smooth, accurate control of loads and delicate "inchng" under power.

Wet-mix machine

■ The True Gun-All Model C, a portable wet-mix machine that pneumatically applies concrete to domes, buildings, and walls, is described in a bulletin from the company. A list of outstanding features for the one-man-operated unit states that no-slump concrete is delivered, volume and pressure are controlled, water-cement ratio is mechanically controlled, and a concrete mixer is not required. The specifications table points out that a Wisconsin air-cooled engine delivers 11 horsepower at 1,800 rpm; and a 125-cfm gyro-type compressor is sufficient for normal operation.

To obtain Bulletin No. GA 156 write to the True Gun-All Equipment Corp., Midstates Bldg., Tulsa, Okla., or use the Request Card at page 18. Circle No. 90.

Stud and nail driver

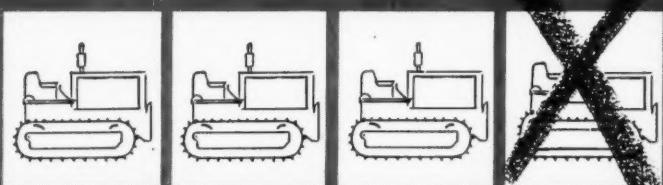
■ The Robot hand-powered stud and nail driver is described in a mailing piece from the importer, John K. Gieling. A picture shows that the driver is composed of five parts—a housing with base seating plate, two jaws, and two springs. Operating instructions point out that a few hammer blows on the driving pin drives the stud or nail into walls, ceilings, and floors. According to the mailing piece, three interchangeable driving pins are used—for $\frac{1}{4}$ -inch studs, $\frac{5}{32}$ -inch studs, and for nails.

To obtain the mailing piece write to John K. Gieling, 300 Fourth Ave., New York 10, N. Y., or use the Request Card that is bound in at page 18. Circle No. 55.

With men who know converters best...it's

Twin Disc

3 to 1!



For years, the construction industry has been the "proving ground" for heavy equipment. And the toughest jobs, under the severest conditions, have constantly been assigned to crawler tractors. That's why men who built and used crawlers were among the first to recognize the advantages of torque converter drive . . . and are the men who know converters best. Today, the four manufacturers of the most powerful crawler tractors available all have torque converter equipped models. Of these, all three of the "Big 3" volume producers—Allis-Chalmers, Caterpillar and International Harvester—have special torque converter transmissions, in which they standardize on Twin Disc Torque Converter Components.

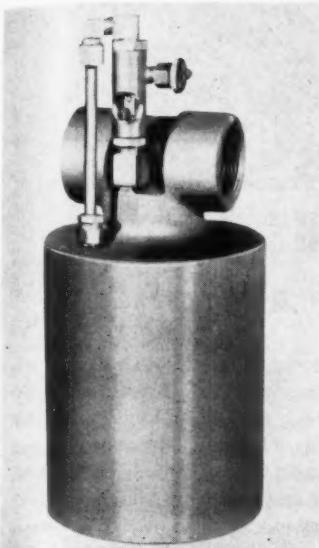


TWIN DISC

Torque Converters

TWIN DISC CLUTCH COMPANY, Racine, Wisconsin • HYDRAULIC DIVISION, Rockford, Illinois
Branches or Sales Engineering Offices: Cleveland • Dallas • Detroit • Los Angeles • Newark • New Orleans • Tulsa

For more facts, use Reader-Reply Card opposite page 18 and circle No. 282



The Murray Sight Feed line lubricator can be used with anti-freeze to prevent tools from icing.

Air-tool lubricator also prevents icing

■ The Murray Sight Feed line lubricator is recommended for oiling all air and steam tools, from a small pneumatic spade to a giant pile hammer. Used with anti-freeze, it is said to prevent icing of tools in cold weather.

An adjustable valve on the Sight Feed mechanism controls the rate of oil that is sprayed into the line. A built-in screen prevents clogging. The lubricator operates only when the tool to which it is attached is working.

According to the manufacturer, the lubricator has been tested successfully with pressures of more than 900 psi. It is available in sizes to handle tools using from 60 to more than 1,000 cfm.

For further information write to the Murray Equipment Co., Box 14, River Forest, Ill., or use the Request Card at page 18. Circle No. 8.

Winch hoist

■ The Lug-All 2-ton-capacity 15-pound winch hoist is described in a folder from the company. The literature states that the unit has oiled-for-life bearings, drop-forged steel hooks, and is equipped with 20 feet of cable. Job photos show the hoist lifting, pulling, tightening, and bending objects at any angle. A specifications chart gives complete data on other winch hoist models.

To obtain Form No. 134 write to The Lug-All Co., Haverford, Pa., or use the Request Card at page 18. Circle No. 62.

Goodyear promotion

Max F. Moyer has taken the post of manager of service sales and equipment division of the tire departments of Goodyear Tire & Rubber Co., Akron, Ohio. He replaces L. W. Moore, who recently was made general manager of the firm's retail stores division. Moyer has been with Goodyear since 1928, except for four years spent in military service.

OCTOBER, 1956

Concrete slab roofs

■ Flexicore precast-concrete slabs for floors and roofs in churches and allied buildings is detailed in a bulletin from The Flexicore Co., Inc. Job photos point out that precasting eliminates the forming, shoring, stripping, and cleaning costs of job-poured concrete. Other action shots show that the slabs can be used for the outside or inside of churches.

To obtain Bulletin No. 4-K write to

The Flexicore Co., Inc., P. O. Box 825, Dayton 1, Ohio, or use the Request Card at page 18. Circle No. 54.

Rust preventive

■ Valvoline Tectyl rust preventive can be brushed, dipped, or sprayed on, and give inside and outside protection for periods up to two years, according to a bulletin from the Valvoline Oil Co. Job photos show that the chemical may be applied to heavy equipment.

raw metals, and smaller machinery.

To obtain the bulletin write to Valvoline Oil Co., Freedom, Pa., or use the card at page 18. Circle No. 93.

Power plant repairs

Work has started on a \$4 million project to restore one-third of the Niagara Mohawk Power Corp.'s Schallkopf power station, which was almost completely destroyed by a rockfall in the Niagara River June 7.

because this concrete looks better, lasts longer!

When paving must be placed fast, highway designers and builders prefer Atlas Duraplastic cement because it makes a more plastic, more cohesive concrete that dumps, spreads and finishes easily. Also, bleeding and segregation are minimized, permitting finishing closer to the paver and earlier curing.

Besides improving workability, Atlas Duraplastic Air-Entraining Portland Cement gives concrete greater durability . . . fortifies it against freezing-thawing weather and scaling caused by de-icing salts.

YET DURAPLASTIC COSTS NO MORE than regular cement—requires no unusual changes in procedure.

Complies with ASTM and Federal Specifications. For descriptive booklet, write:

UNIVERSAL ATLAS CEMENT COMPANY

UNITED STATES STEEL CORPORATION SUBSIDIARY
100 PARK AVENUE, NEW YORK 17, N. Y.

*DURAPLASTIC is the registered trade-mark of the Air-Entraining Portland Cement manufactured by Universal Atlas Cement Company.

AIR-ENTRAINING PORTLAND

Atlas Duraplastic Cement

MAKES BETTER CONCRETE AT NO EXTRA COST

OFFICES: Albany • Birmingham • Boston • Chicago • Dayton • Kansas City • Milwaukee • Minneapolis • New York • Philadelphia • Pittsburgh • St. Louis • Waco

United States Steel Hour—Televised on alternate Wednesdays—See your local newspaper for time and station.
For more facts, use Reader-Reply Card opposite page 18 and circle No. 283

winter

Winter work is costly, can eat up profits unless job is well planned

Winter construction—coming more and more into general practice as a means of keeping profits high during a season when work slows down—can be extremely costly if contractors do not prepare for the known risks involved. The most important thing in winter construction is knowing when

to take a job and then preparing for it.

This rule, which often spells the difference between profit and loss on winter work, is one followed by W. W. Clyde, president of W. W. Clyde & Co., Springville, Utah, a firm with 40 years of experience—both in summer

and winter—mainly on highway, airfield, and utility construction.

Clyde feels that if winter work must be done, the only thing to do is to gear up fully to meet winter conditions before cold weather arrives. Anti-freeze, starting solutions, heaters, extra parts, housing protection for repair work on heavy equipment, a course of instruction to foremen and operators in winter work, and all the other necessary steps for a well organized winter job should be planned in advance. Preparation for a job is important at any time, but it is doubly important when work is to be done in cold weather when cold cuts into a workman's efficiency so much that the best he can do is hardly enough.

Winter construction is sometimes worth a gamble, Clyde says, particularly if a contractor needs equipment or a crew for a new job in the spring, if the contract carries a penalty clause which will be enforced, or if the public relations value in completing a job during cold weather is important.

Winter jobs cost more

Any firm doing a job during the winter, according to Clyde, should be "aware that the work will cost more than if it were done in favorable weather. On a cold day, the efficiency of the men drops, and problems multiply every time the temperature goes down one degree."

"On a cold morning drill-steel breakage can be twice as high as it is on a warm summer day. If our firm works in bedded rock formations during the winter, we use heavy-duty rippers pulled by powerful tractors. But that can be costly too, particularly if a ripper shank snaps."

Clyde points out that cold weather hits men and equipment in any number of ways. "Storage batteries lose a good deal of their life at low temperatures. Compressed-air equipment freezes fast unless money is spent for protection. Then a firm can figure that it takes 30 extra minutes to get equipment started, warmed up, and in operating condition on a cold morning."

Concrete pours on bridges and other structures are risky during winter, and they require a lot of protection, Clyde emphasizes. "Insulative covers and heaters have to be provided even though temperatures might not go as low as expected during the night. And since there is always a danger from fire when formed concrete pours are kept warm, extra watchmen, fire extinguishers, and other protection have to be provided".

Dirt work difficult

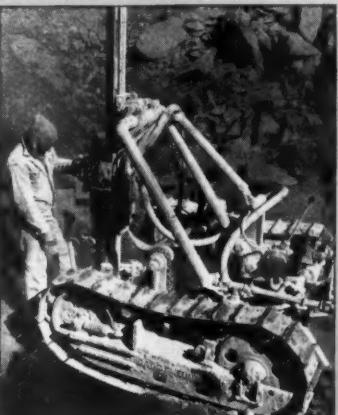
"In really cold weather," Clyde de-

here
there
everywhere



the G-800 TRACDRILL

The self-propelled CP Tracdrill pivots . . . moves forward or backward and can turn in its own length! "Tracdrill" has a hydraulically actuated U-arm for fast drill carriage positioning. Can tow a 13,000 pound compressor up a 10% grade. Its "knee action" crawler tracks take rough terrain in stride. You save time moving from hole-to-hole, get more accurate spotting and gain productive drilling time.



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PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES • ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

For more facts, use Reader-Reply Card opposite page 18 and circle No. 284

Utah road builder claims cold weather jobs are profitable if contractors know when to take work, then prepare for it

clares, "dirt work is out of the question unless the job involves building a railroad fill or compaction requirements are not too rigid. Building a compacted earthfill in freezing weather is so risky that I would not permit it if I were an engineer. Moisture cannot be added to the earth because the water will freeze. And several inches of freezing and frost penetration can destroy the compaction in that much fill. The whole process can cost a contractor money and ruin an otherwise good fill. It's hard to say which of the two is more important."

Highway projects

Clyde's view is that the profit margin in highway work is so small because of the competition in this field that few contractors can afford the luxury of adding the extra cost for winter work to their jobs. "If a contractor is to make a profit in highway construction today," says Clyde, "he needs new equipment or machinery in top-notch condition. Then, the project must be so well planned that this equipment works at peak efficiency unless weather is so unfavorable that the job cannot be continued."

Just how much highway projects will be stretched into the winter months when work begins under the interstate highway program is anybody's guess, but Clyde believes that better work will be done if projects can be let in the late fall and winter so that the successful bidders can use the cold months to plan their work carefully, order materials and equipment, and get ready to start the job in the spring or summer. Clyde hopes, incidentally, that when work starts on the new program, the present bare profit margins for all contractors will be increased.

Winter is deceptive

One of the worst dangers of a winter job, Clyde believes, is that a contractor may push his luck too far. A successful job, done during a mild winter, or a series of mild winters, may cause a contractor to ease up on the necessary precautions against bad weather. One cold snap may wipe out a job's profit if a contractor has not really prepared for the cold. Then there is the added danger that contractors may take a job and do it during the winter, when such a job might be done more profitably during the summer.

Clyde policy

Clyde, who likes to see dirt moving, winter or summer, has a first-hand knowledge of winter construction and its hazards. One of his first jobs, be-

tween Pequop summit and Silverzone Pass in Nevada, had plenty of cold-weather problems. A few years ago, the firm had men working in temperatures below 40 degrees, freezing their faces and tearing up more equipment than Clyde likes to think about.

(Concluded on next page)



W. W. Clyde works at his desk in the Springville, Utah, headquarters of the firm that bears his name. The company keeps its jobs to a minimum during winter, using the cold months for equipment overhaul in preparation for a 9-month working season.

Clipper CONCRETE SAWS

Model C-250
Self-Propelled optional.
Other models from
1½ H.P. to 36 H.P.
Priced from \$395.

CUT MORE CONCRETE AT LESS COST With CLIPPER CONCRETE SAWS

Cut all day at a pace that never tires—up to 12 feet a minute. Smooth, positive traction with Clipper's exclusive abrasive-coated drive wheels, in direct contact with solid rubber tires. Never slip, never slide, even under the worst operating conditions.

DIAMOND BLADES



Clipper Diamond Blades are made for any job—any aggregate—every saw! Choose your Clipper Diamond Blade from a wide variety of specifications to cut green or old concrete with outstanding speed and economy. IF YOU DON'T KNOW DIAMONDS, KNOW YOUR MANUFACTURER.

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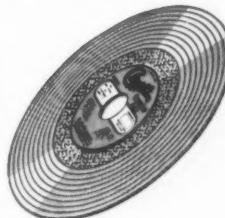
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GREEN-CON® ABRASIVE BLADES



Savings as high as 80% with Clipper's New Reinforced Green-Con Abrasive Blades. A range of specifications for all types of limestone aggregates, as well as harder aggregates, when mixed with limestone. Green-Cons are available to cut 3/16" - 1/4" - and 3/8" wide joints.

FOR CLIPPER QUALITY AND LOWEST POSSIBLE COST...

LOOK for the BRIGHT ORANGE COLOR—with the trade mark CLIPPER

which identify genuine Clipper Quality. Manufactured under the most advanced Quality Controls known to the industry—your assurance of consistent quality and peak performance, rim to stub, blade to blade.

THESE EXCLUSIVE CLIPPER FEATURES GIVE YOU THE LOWEST CUTTING COST PER FOOT



- ① Self-Propelled with Abrasive Coated Drive Wheels.
- ② 4 Wheels with 3-point, No-Bind Blade Suspension.
- ③ Positive Screw Feed. ④ Patented Water Application.
- ⑤ Dashboard Controls.

Yes . . . Clipper's SIMPLE Design . . . RUGGED construction . . . DEPENDABLE performance gives you a fast powerful Concrete Saw for heavy production cutting on all concrete and asphalt jobs. EXCLUSIVE Clipper Features include SELF-PROPELLED unit with ABRASIVE

COATED DRIVE WHEELS and rear wheel drive for powerful forward thrust. POSITIVE SCREW FEED—a "MUST" when using low-cost "Green-Con" Abrasive Blades to compensate for diminishing blade diameters. Protects valuable diamond blades from bumping and scraping. A Positive Control AT ALL TIMES.

MANUFACTURING CO., KANSAS CITY 8, MO.
Sold Direct by Factory Trained Representatives
From Factory Branches in Principal Cities—Coast to Coast.

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 285

(Continued from preceding page)

The trend of his company, Clyde says, is to cut down on cold-weather jobs even more than has been done in the past, for even a profitable job can suffer if it is extended too far into the cold months. Whenever winter work can be done profitably, though, the firm goes to it. Clyde likes particularly to land some type of heavy grading job—preferably in rock—between northern and southern Utah during the cold months so that he can keep a crew busy during winter. These jobs can profitably be done in the off-season, but usually do not show the profit of a similar job done during warmer weather.

For the most part, W. W. Clyde & Co. projects are under way in the

months from March through November in Utah, and sometimes, Nevada and Idaho. On any of these spreads, the equipment is good—much of it is new—and all of it is in top-notch operating condition.

Keeping the machines in good working order is a job that is handled when work is not under way in the field. As soon as the working season ends, not long before Christmas, equipment requiring a major overhaul is sent to the central headquarters shop in Springville, where mechanics work through the winter. Superintendents and foremen usually are retained through the winter, for work on a rock job or on equipment in the Springville shop. All equipment gets a thorough going-over when work is shut down so that it will be ready to

go on the line by March 1 for a nine-month summer season.

Most successful contractors, Clyde points out, view winter construction much as he does and operate their firms much the same as his. He feels that this policy is necessary for a company to stay in business—and stay as a permanent organization.

THE END

Russell, Burdsall & Ward makes sales appointments

The new assistant eastern sales manager of Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y., is Russell E. Hoehl. He has been with the firm since 1933.

Replacing him in Philadelphia is Alfred A. Binkerd.



The Supreme masonry saw is designed for cut-off, notching, and angle-fitting operations.

New masonry saw designed for cut-off, notching

A new masonry saw designed for economical cut-off work, notching, and angle fitting on all types of masonry units is announced by the J & H Products Co. According to the company, the Supreme masonry saw features economy, ease, and accuracy of operation.

Either the table or the full-floating cutting head can be locked in position as required, the head being easily cranked up or down to the desired height without linkage adjustment, the manufacturer reports. The vertical blade travel is controlled by a pedal.

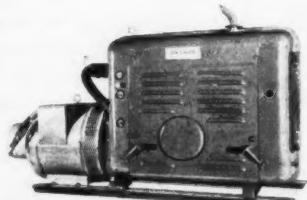
For wet cutting, a special splash guard and coolant nozzles keep the water on the blade, in the cut, and in the water-storage door. Any type of masonry blade can be used with the Supreme saw.

For further information write to the J & H Products Co., 3007 Elm St., Dallas, Texas, or use the Request Card that is bound in at page 18. Circle No. 121.

Add two new groups to generator line

Two new groups of gasoline electric plants have been added to the line of generators manufactured by the Gen-A-Matic Corp. Both air and water-cooled models, with ratings of from 400 to 75,000 watts, are available.

The new plants are available with automatic and semiautomatic controls.

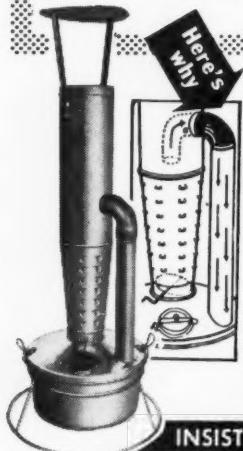


The Gen-A-Matic Model 300-A electric plant puts out 30,000 watts of power.

trol apparatus for special applications. Any desired control configuration can be specified.

For further information write to the Gen-A-Matic Corp., 14741 Bessemer St., Van Nuys, Calif., or use the Request Card at page 18. Circle No. 20.

The most widely used Salamander for construction!



WHY HY-LO LEADS:

- Patented Return Gas Principle ends SMOKE... eliminates SOOT!
- Low first cost low operating cost.
- 70,000 to 140,000 BTU per hour!
- Burns only 1/2 to 1 gallon per hour of low cost fuel oil.
- One filling lasts 10 to 20 hours.
- Requires no skilled attendant.
- Lights with a match...easy to operate.
- Exclusive damper for quick extinguishing.
- Carrying handles for easy moving.

AVAILABLE IN ALL PRINCIPAL CITIES

INSIST on HY-LO Salamanders!

HY-LO's patented Return Gas Principle guarantees you a smokeless, clean-burning Salamander, requiring minimum care and attention. Nationally accepted, HY-LO's superior performance is the reason it is most widely used in the construction industry! HY-LO gives more clean heat per dollar invested than any other Salamander!

Schenk PRODUCTS CO.

279 Stowell Street, Upland, California

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Loosens FROZEN PARTS FAST!

Handy Won't Leak Shoots 3 Feet

Same formula as famous Kroil that has pleased 14,000 industrial users for 10 years or more.

Loosens stuck together metal parts, bushings, bearings, bolts, screws, pipe, etc., "anything from an embalmer's needle to a bulldozer," one customer said.

"Like an extra employee," said another. "Turned rust into mush, put \$50,000 equipment back to work."

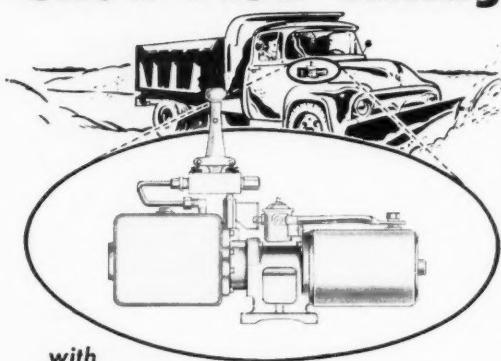
You too can get these results. Try Aerokroil at our risk. Send \$2 cash, and we'll pay postage.

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12-OZ. CAN \$2. F.O.B. NASHVILLE CASE OF 12 \$18.75

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Fast-Automatic Snow Plow Lifting



MONARCH DYN-A-MIGHT POWER HYDRAULIC CONTROLS

Fan Belt or Electric models available for practically all makes of trucks. See your dealer or write for full details.

MONARCH

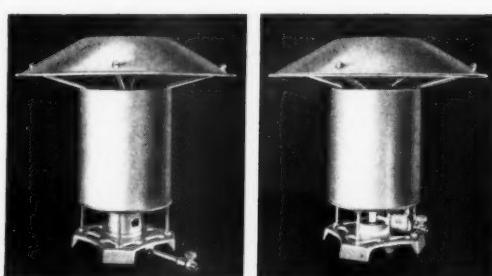
ROAD MACHINERY COMPANY

1331 Michigan St., N.E. Grand Rapids 3, Michigan

For more facts, circle No. 288



Weldit THERMO-DISC SALAMANDERS



MODEL #800

MODEL #900

Weldit, Inc. presents their new improved line of L-P Salamanders. Featuring the famous "Flame Dome" for 360 degree heat and introducing the amazing "Thermo-disc" for extra heat radiation. 100% automatic shut-off on Model #900. Tank top Model #850 also available.

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DETROIT 38, MICHIGAN

For more facts, circle No. 289



To reduce stress and strain on the tractor main frame, the Ottawa back-hoe-loader combination is mounted on a common frame. The combination, shown here on an International W-400, is also available for the W-600 and the 300 tractors.

Tractor backhoe, loader mounted on common frame

The Ottawa backhoe and loader combination, designed for International tractors, is mounted on a common frame to reduce stresses and strains on the tractor main frame, according to the manufacturer. The attachment is made by the Ottawa Steel Division of the L. A. Young Spring & Wire Corp.

The patented One-Trol lever has been incorporated into the loader and backhoe hydraulic systems. This single-acting device controls actions which normally require the use of multiple levers, the company reports.

Two double-acting cylinders are used to actuate the loader bucket, to provide balanced breakout and double down pressure. All hydraulic cylinders on both units are of the double-acting, piston type with chrome-plated rams. Backhoe hydraulic outriggers can be controlled individually to level the tractor on slopes up to 15 degrees.

For further information write to the Ottawa Steel Division, L. A. Young Spring & Wire Corp., 5th and Main, Ottawa, Kans., or use the Request Card at page 18, Circle No. 112.

Material-spreader box

The Yaun material-spreader box, featuring an all-welded motorless tailgate, is described in literature available from the company. According to the literature, the box weighs less than 500 pounds, and can be bolted or tack-welded on any size dump truck. Maximum opening of the tailgate is 6 inches.

To obtain the literature write to the Yaun Mfg. Co., Inc., P. O. Box 1508, Baton Rouge, La., or use the Request Card at page 18, Circle No. 137.

Drinking cups

Ajax and Aero drinking cups imprinted with safety slogans are described in a mailing piece from Dale & Rankin, Inc. The Ajax wedge-shaped cups are available in 4, 6, and 7-ounce sizes. The flat-bottom Aero cups come in 3, 4, and 5-ounce sizes. Data is included on outdoor water tanks and indoor dispensers.

To obtain the mailing piece write to Dale & Rankin, Inc., Route 10, Hanover, N. J., or use the Request Card at page 18, Circle No. 50.

Wire rope catalog

A catalog from the American Steel & Wire Division of U. S. Steel Corp. contains complete information on the firm's Tiger Brand wire ropes. Various classifications of hoisting ropes, bridge ropes and strands, guardrail cable, and wire-rope fittings are detailed. Two pages devoted to each type of rope carry a description and cross-section view of the item, job photos, and a specification table. General information is given on lubricants and grades of wire rope. Conversion tables and a glossary of terms also are included.

To obtain Catalog No. 6510 write to the American Steel & Wire Division, U. S. Steel Corp., 1420 Rockefeller Bldg., Cleveland 13, Ohio, or use the

Request Card at page 18, Circle No. 40.

Floor clips

Floor clips, made of 16-gage galvanized steel $\frac{3}{4}$ -inch wide, are described in a folder from Speedway Mfg. Co. The clips are bent at right angles, with $1\frac{1}{8}$ inch designed to be imbedded in concrete and $1\frac{1}{8}$ inch to protrude for sleeper anchorage. The step-by-step installation process is detailed. Outstanding features and suggested specifications, with or without use of a fill, are included in the folder.

To obtain the folder write to Speedway Mfg. Co., P. O. Box 261, Richmond, Ind., or use the Request Card at page 18, Circle No. 88.

Ruggedness Built In Makes Wagner Stand Out



**"Torture Tested" Wagner Tractor Equipment
Gives Longer Life—Reduces Down-Time and Repair Cost**

Rugged work requires rugged equipment and that's exactly what you get with Wagner "Torture Tested" tractor equipment. Every stress point is *doubly* protected. Heavy-duty construction keeps maintenance costs way down and productive time way up. Wagner equipment stays on the job day in and day out working for you and more profits. No wonder Wagner tractor equipment is recog-

nized as so far superior it has become No. 1 in America by a wide, wide margin. See all the rugged features of Wagner tractor equipment and the numerous attachments that can make a tractor your most versatile piece of equipment. Get proven dependability no matter how tough the job. Get Wagner tractor equipment today.



"WAGNER BUILT" MEANS "BETTER BUILT" FOR OVER 105 YEARS

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WAGNER IRON WORKS, 1905 South 1st St., Dept. 22B
Milwaukee 1, Wis.

Send me more information on Wagner Tractor Equipment
for a tractor.
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winter
work

Winter planning and equipment keep city hall and court house job active

Column forms of 5/8-inch plywood, backed by 2 x 4's, are tied with Signode steel strapping by a workman using a special ratchet tool supplied for the purpose.

C&E Staff Photos

**the man at the
controls doesn't
wear kid gloves**

**he has a tough job to do
and needs equipment
that can take it!**



HENDRIX

DRAGLINE BUCKETS



FILL FASTER



HANDLE EASIER



DUMP CLEANER

All Hendrix Buckets available without perforations

HENDRIX MANUFACTURING CO., Inc.

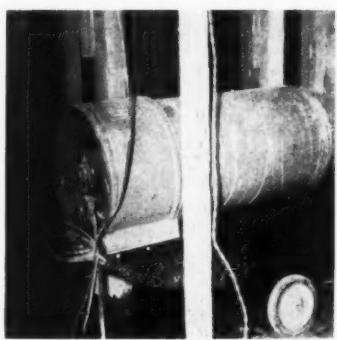
MANSFIELD, LOUISIANA

For more facts, use Reader-Reply Card opposite page 18 and circle No. 291



See you at the ROAD SHOW — CHICAGO

Jan. 28-Feb. 2, 1957



Some of the 15 unit heaters in use at one time during cold weather were Clayton Summaire units like the one shown here.

CONTRACTORS AND ENGINEERS

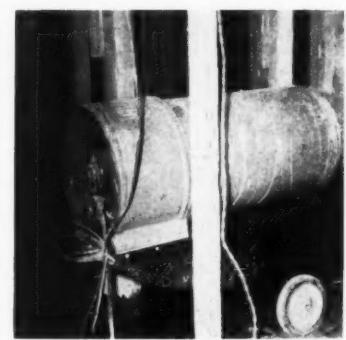
would have to be carried on during the winter. But Perini first carefully planned its operations so that as much of the framework as possible would be completed during the first summer of work. Then, equipping the job with tarpaulins, portable heaters, and other items needed so that the hazards commonly associated with winter construction could be avoided, the job was kept operative through the coldest weather of last winter. Though delays were inevitable because of cold and wind, the contractor probably lost less than one week of actual working time throughout the winter.

The new public building, designed and with construction supervised by Holabird & Root & Burgee, Chicago, Ill., with Law, Law, Potter & Nyström, Madison, as associate architect, is in the heart of Madison, just across the street from the Wisconsin state office building. With a ground floor measuring 235 x 279 feet, and with a gross area that will measure 403,852 feet, the building occupies a sloping city block that formerly was used as a parking lot.

Since there were no buildings to raze, Friede & Lunder, Madison, started the project in March, 1955, using a 1½-yard shovel, two small backhoes, and two tractor-loaders to excavate the basement. Excavated material, containing no rocks, was hauled to waste or temporary storage areas by a fleet of trucks. Some of this excavation had to be brought back to the site later for use as backfill and for site grading.

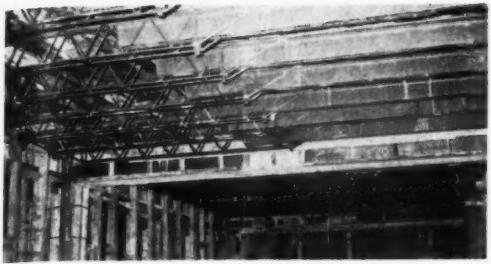
Setting steel

The 2,800 tons of structural steel incorporated into the building were furnished by Bethlehem Steel Co., Bethlehem, and Worden-Allen Co., Milwaukee, and erected by Bethlehem Steel Co., with a crane and guy derricks. A Manitowoc 3000 crane with a 100-foot boom and 20-foot jib placed the steel for the first four or five



Some of the 15 unit heaters in use at one time during cold weather were Clayton Summaire units like the one shown here.

CONTRACTORS AND ENGINEERS



Spanall adjustable joists, a combination of a double bar joist and a rolled steel beam, are used in forming deck slabs. Adjustable both for camber, to compensate for a load, and for a length up to 20 feet, they are supported on 4 x 4 shores with Elis clamps.

floors of the structure. Then two guy derricks were set up on the steel frame to raise the remainder of the structural members.

On the side of the structure where excavation went deepest, the structural steel framework was encased in the concrete retaining walls. This meant that the walls could not be formed and poured until steel had been set and riveted for the first two floors.

Basement walls, reaching a maximum height of 24 feet, were formed with plywood panels backed with wood joists and wales. Whenever possible, concrete for the spread footings and basement walls was poured directly from transit mixers. In other cases, the crane-and-bucket method was used.

Column forms, of $\frac{5}{8}$ -inch plywood backed by vertical 2 x 4's, were made with each side having a 2 x 4 flatwise at each edge and one on edge in the middle. The columns were tied with Signode steel strapping, tightened and locked by a special tool supplied with the strapping.

All except the sixth and seventh floors and the roof were of pan-and-joist construction. Shores made of two pieces of 4 x 4 held together with Elis clamps supported 4 x 4 purlins on which the 2 x 10 soffits were placed. Ceco 30-inch pans, 14 inches high, were set to form the 6-inch joists and 3-inch floor slab.

Adjustable shores

On the sixth and seventh floors and the roof, a flat-slab construction was used. To support the forms for these slabs, Perini used Spanall adjustable joists. These German-made joists consist of one section that resembles a double-bar joist with rolled steel beam which slides in or out between the bar joists. Very easy to strip, the Spanall joists are adjustable to a length of 20 feet and adjustable for camber to take care of the differences in deflection for different spans.

A device that speeded concrete work—in both warm and cold weather—was one used by crews building forms. This was a small New London electric-powered belt conveyor, which was inserted in an opening between floors and used to raise shores, form joists, lumber, and other materials from floor to floor as work advanced. One workman laid the pieces on the belt on one floor, and another man removed them when they reached the next floor. Moving the machine from floor to floor was simple, since it was light enough to be lifted and carried to a higher story.

All of the steel erection, the basement walls, and much of the concrete work was completed by the time cold weather moved in late in the fall. The forming and concrete placing and finishing operations, carried over into

(Continued on next page)



This little New London electric belt conveyor, set between an opening in the floors, carried materials from form-building crews to the form-setters.

GALION

T-500 and T-600

GRADE-O-MATIC^{*}

MOTOR GRADERS

*Utilizing a Torque Converter and Power-Shift Transmission



Model **T-500**
125 H.P. 25,000 Lbs.
(Weight with Scarifier)



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140 H.P. 30,785 Lbs.
(Weight with Scarifier)

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THE GALION IRON WORKS & MFG. CO.
GALION, OHIO, U.S.A.

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 292

NEW STANDARDS OF WORK PRODUCTION !

Engineered balance of weight and power produces the utmost in "PUSH-POWER" at the blade—where power means most in moving more material in quicker cycles. Torque Converter drive provides up to 300% torque multiplication for tough going, absorbs shock loads and prevents engine lagging and stalling.

NEW EASE OF OPERATION!

No tiresome old-type gear shift or foot clutch to operate. All you do is move the fingertip hydraulic control levers. Either forward or reverse shift can be made "on the go"—while moving in either direction. Operator fatigue is greatly reduced.

TORQUE CONVERTER AND POWER-SHIFT TRANSMISSION.

Because of the AUTOMATIC features on Galion GRADE-O-MATIC Graders the human element is reduced to a minimum in achieving top grader performance.

These include AUTOMATIC power multiplication and application as needed, and AUTOMATIC adjustment of engine speed to the load at any predetermined working or travel speed.

THE GALION IRON WORKS & MFG. COMPANY

Dept. CE-106, Galion, Ohio, U.S.A.

Please send me literature on the GRADE-O-MATIC Graders checked:

- Model T-500 Model T-700 — 190 H.P., 40,125 Lbs. The world's biggest, heaviest, most productive Motor Grader

OTHER GALION MOTOR GRADERS: Models 118, 104, 450, 303 & 503

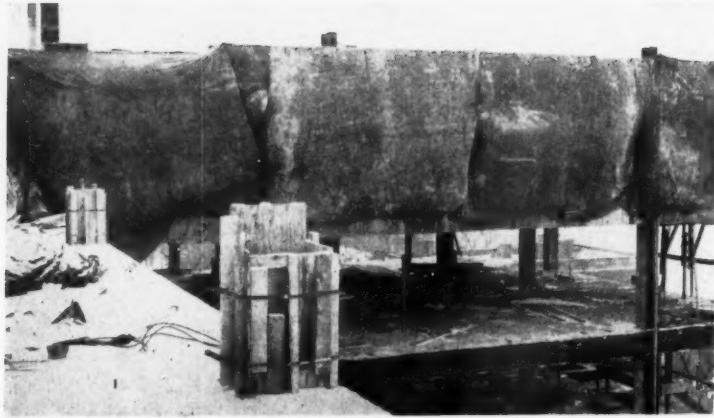
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Flame-proofed FlameZel tarps enclose an area on the seventh floor while heated concrete is placed. Though slabs are covered with only a single thickness of canvas, they are thin and absorb enough heat from below to prevent concrete from freezing.

(Continued from preceding page)

the colder months, were essentially the same as they were during warmer weather.

Concrete was delivered to the job in transit mixers that dumped into a bucket riding the Archer double tower. The tower, with a three-wheelbarrow platform, had an elevator powered by a Clyde 3-drum hoist driven by an International U282 engine. It carried concrete to a 1½-yard double-gated hopper on the proper floor and also carried other materials to workmen at the higher levels.

Four Kwik-Mix motorized buggies, each with a ½-cubic-yard capacity, received concrete from the hopper and brought it to the forms. These speedy rigs handled concrete

at an average rate of about 25 cubic yards per hour—an amount that would have required much more than four hand buggies.

Concrete was consolidated with Homelite electric vibrators powered by Homelite generators. Most of the floor sections were simply struck off to grade, and the finished floor placed later. In the few areas where integral finished floors were required, power trowels were used for the job.

Enclosures heated

Though work methods did not change with the onset of winter, heaters, tarpaulins and other equipment kept the concrete work moving along, while material-handling equipment made it possible for much work to be done inside the parts of the building

Here's the safest ratchet lever hoist ever invented!



It's the original Coffing Safety Pull, a ratchet lever hoist with dual pawls and ratchet that keep load from slipping. Safety stops prevent spinning out of control and if overloaded, "safety valve handle" will bend before any other part of hoist fails. The ¾-ton model (illustrated) weighs but 14½ lbs.

Fifteen other models available handling up to 15 tons. Ask your recognized distributor or write for bulletin SP, Coffing Hoist Division, Duff-Norton Company, 810 Walter St., Danville, Ill.

The exclusive, cadmium plated Coffing Safety Hook with spring actuated locking latch designed to shed, not snag, on wires or other objects is available for the ¾-ton, 1½-ton and 3-ton models at slightly additional cost.



COFFING HOIST

Division of Duff-Norton Company

For more facts, use Reader-Reply Card opposite page 18 and circle No. 293



▲ Erection of the framework, done by Bethlehem Steel Co. was hurried during the summer so that as much work as possible would be done before winter. This Manitowoc 3000 crane with 100-foot boom and 20-foot jib completed steel work on the lower floors.

Less down time...longer life when protective maintenance is done ON TIME!



HOBBS Engine Hour METERS

Modern engineers consider maintenance of powered equipment in terms of HOURS instead of miles. ON-TIME lubrication, filter replacement, oil change, overhaul, etc., means better performance and longer equipment life.

The Hobbs Meter, a true electric timing instrument, records actual running time in HOURS and MINUTES—not a revolution counter! Two models—direct-reading (upper illustration) and pointer type. Approved and recommended by leading manufacturers of construction equipment. Ruggedly built . . . easy to install in the field. See your factory branch representative or distributor . . . or WRITE:

John W. Hobbs Corporation
2067 YALE BLVD. SPRINGFIELD, ILLINOIS
A Division of Stewart-Warner Corporation

For more facts, use Reader-Reply Card opposite page 18 and circle No. 294

CONTRACTORS AND ENGINEERS

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OCTO

that had been enclosed before cold weather struck.

When temperatures dropped below 40 degrees during concrete-placing operations, portions of the floors were completely enclosed with FlameZel tarpaulins so that heat provided by oil-burning Silent Glow and Clayton Summerraire heaters would be retained. During the coldest weather, as many as 15 of these unit heaters were in use simultaneously, while more than 30,000 square feet of canvas was being used for enclosures.

Concrete placing was done any time the temperature was above zero and rising. Heated concrete was delivered to the job and the thin floor sections soon absorbed enough heat from below to prevent the fresh concrete from freezing, even though the slabs

were covered with only a single thickness of canvas.

One of the major problems during the winter months was that of fastening the tarpaulins securely so that wind would be kept out of the enclosures and the tarpaulins themselves remain undamaged. This problem bulked larger on the higher floors, where the wind was very strong during winter storms.

Winter masonry work

Masonry work was able to continue at full speed all winter, due to the special provision Perini had made for handling materials. West Brick buggies brought pallets of brick and tile from a warm storage area in the basement to bricklayers on all floors. Since both brick and tile were delivered to

the job in pallets, their handling was expedited. Mortar was delivered from mixers in the basement in West mortar buggies. These material-handling techniques meant that frozen or ice-covered materials never had to be handled.

The areas in which bricklayers worked on the upper floors were enclosed by Visqueen plastic tarps that kept out cold and wind but admitted plenty of natural light. Silent Glow or Clayton heaters provided warmth inside the enclosures. Whenever weather was so cold that it was impractical for crews to work on the more exposed upper floors, the men were shifted to work on lower floors.

The phase of construction most frequently delayed was the placing of exterior stonework. This was done

under subcontract by the Nashville Stone Setting Co. Inc., Nashville, Tenn., which used a Monorail system that easily handled pieces weighing as much as 1,500 pounds. Most of this work was done from a swinging scaffold on the exterior of the building. Despite delays due to cold and wind, however, the stone setting kept pace with the rest of construction.

Garage occupies floor

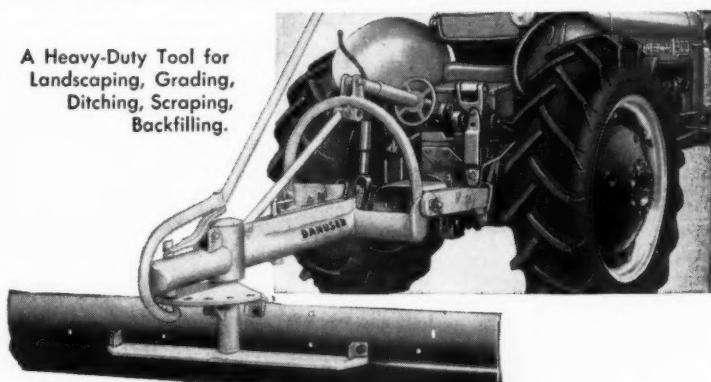
The combined city hall and court house, scheduled for completion next spring, is on a sloping block and has grade entrances to three floors. At the lower corner, a vehicular entrance leads to a garage that occupies a full floor. Beneath part of the garage is a basement. In the below-ground basement and garage sections, emergency



▲ One of two guy derricks taking over the job of placing steel for the upper floors works on a wing that will have steel columns encased in the concrete walls.

Low-Cost Blade Makes Your Light Tractor an Efficient Earth Mover!

A Heavy-Duty Tool for Landscaping, Grading, Ditching, Scraping, Backfilling.



One man can operate the DANUSER BLADE by himself and make adjustments without leaving the tractor seat. Blade uses the tractor three-point suspension principle, with adapter kits available for older models. It is raised and lowered by the tractor's hydraulic system, and turns all the way around so you can push with it.

Rugged construction throughout. Built of reinforced welded structural steel and heavy tubular members. Abrasion-resistant moldboard

with replaceable, standard grader cutting edge. Moldboard mounting is supported on two oversize tapered bearings to maintain stability. It shifts 8 inches right or left of center for cutting beyond tractor wheel line.

Danuser built the original rear-mounted blade, and is still producing the finest tool of its kind on the market. Thousands are in daily use throughout the world. Tested and approved by tractor manufacturers.

Quality Since 1910

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535-45 East 3rd Street • Fulton, Missouri

If you will give us the model of your tractor, we will be glad to furnish complete descriptive material.

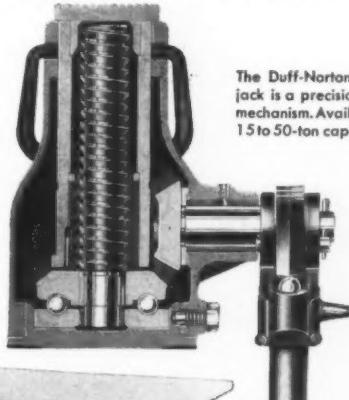
For more facts, use Reader-Reply Card opposite page 18 and circle No. 295

OCTOBER, 1956

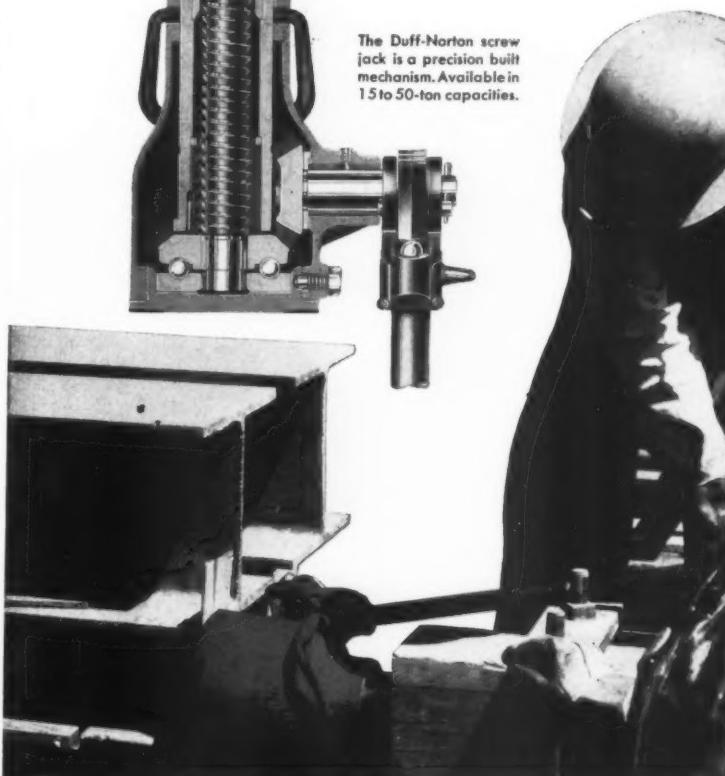
Duff-Norton

Ball Bearing Screw Jacks can't creep or drop— will hold loads indefinitely

Standard of the world for over 70 years



The Duff-Norton screw jack is a precision built mechanism. Available in 15 to 50-ton capacities.



Can be used upright or on side with equal efficiency—no fluids to leak, no air to "lock."

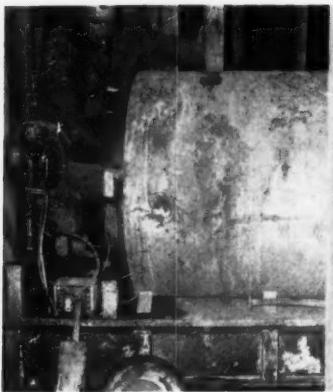
Duff-Norton Ball Bearing Screw Jacks, employing the basic inverted nut and screw principle, are locked in position when under tension, can't move up or down unless you insert the jack handle and apply hand power to ball bearing actuated gears in base that turn the nut. They are safe, foolproof, dependable, fully enclosed, rugged—seldom need lubrication or servicing.

For complete specifications on various capacities and name of your nearest recognized distributor, write the world's oldest and largest manufacturer of lifting jacks, the Duff-Norton Co., P. O. Box 1889, Pittsburgh 30, Pa. Ask for bulletin AD-12-S

DUFF-NORTON

"Giving Industry A Lift Since 1883"

For more facts, use Reader-Reply Card opposite page 18 and circle No. 296

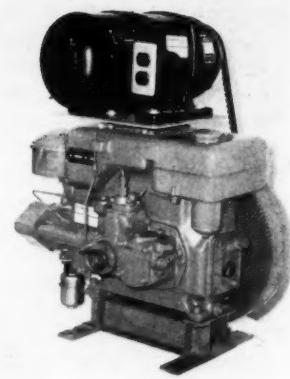


Inside enclosures, oil-burning heaters like this Silent Glow unit maintained the proper curing temperature even when outside temperatures fell to zero or below.

Diesel-electric plant generates 2,500 watts

The Power-Lite Model DG-2500 diesel electric plant announced by the Lynn Engineering Co. generates 2,500 watts of 115-volt, 60-cycle power in a housing that weighs 315 pounds. The manufacturer claims that it costs as little as half as much to operate and will last up to 10 times as long as a gasoline-powered unit of the same output.

The generator works at 1,800 rpm, is glass insulated, and moisture and fungus-resistant. It has oversize, sealed ball bearings and is mounted above the engine, belt-driven by a steel cable, cog-type, "no-stretch" V-belt. Voltage regulation is plus or minus 5 per cent.



The engine is a 1-cylinder, 4-stroke, water-cooled diesel rated at 6 horsepower. It has a built-in water tank and a flywheel condenser, the latter

lighting was provided during winter construction by Til-Lee propane floodlights. These powerful lights were attached to the top of the small gas tanks supplying them with fuel. Each of the units can be picked up by one man and carried to another location. They were used only in an emergency, since the areas are usually illuminated by electricity.

There are grade entrances to two other floors. The ground floor of the building can be reached via entrances leading from two streets, while the first floor is at about the grade of the high corner of the block. The first three floors cover the entire building area, while upper floors are set back. A two-story penthouse for mechanical equipment and a cooling tower rise above the seventh floor.

Lower floors will be occupied by city and county departments. For the convenience of the public, those offices visited by a number of people paying bills or taxes are located on the first floor. The city and county jails will occupy the sixth and seventh floors, and a special elevator will connect them to the police dock in the basement. Four regular passenger elevators and a service elevator will serve the rest of the building.

The structure's steel frame will be encased in concrete, and the exterior walls will be faced with Indiana limestone backed with 8 inches of clay brick and lined with glazed or clay tile and plaster. These masonry walls are 15 inches thick.

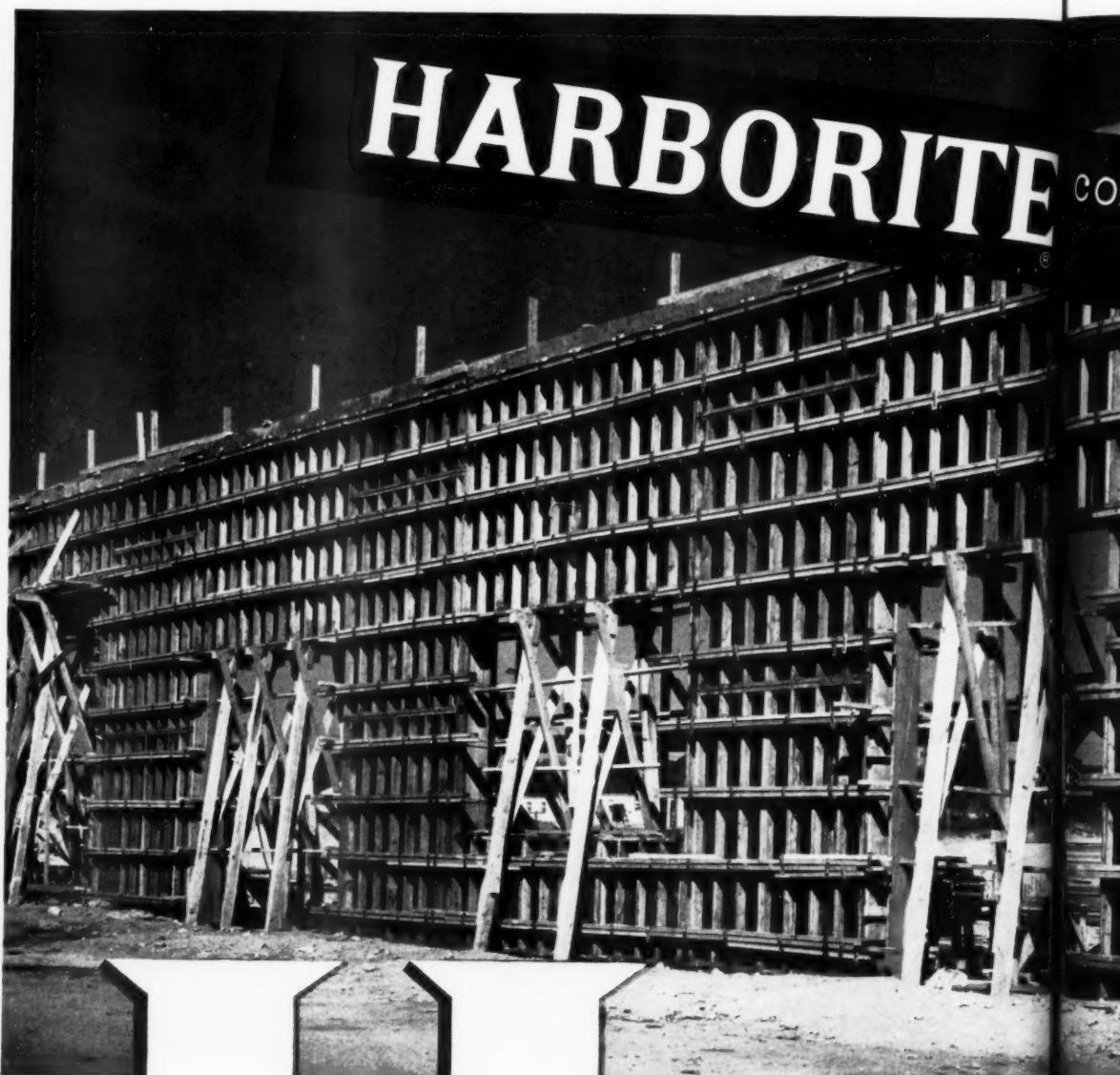
Entrances will be finished in black Cold Springs granite. Most of the interior will be finished with glazed tile or plaster with acoustical ceilings. Court rooms, city council chambers, and county board rooms will be finished with cherry, mahogany, oak and walnut paneling. These rooms, on the second floor, will be the only rooms with air conditioning.

James R. Johnson, project manager, is supervising the project for B. Perini & Sons. Richard Johnson is assistant superintendent. Albert Stevenson looks after the carpenter work, Irving Rocheford, Jr., supervises the laborers, and Richard Johnson maintains the liaison with subcontractors and looks after the general layout. The project engineer is Norman Boiani and the office manager is Alanson Varney. John Ablondi is masonry superintendent.

E. D. Perkins was superintendent for Bethlehem Steel Co. on the erection of the structural steel. Harlan Burroughs supervised the stone-set-

ting operations for Nashville Stone Setting Co. James H. Duggins, field superintendent for the architects and engineers, is assisted by John F. Hertler.

THE END



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WASHINGTON

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ABERDEEN, WASHINGTON

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CONTRACTORS AND ENGINEERS

Prices vary

OCTO

eliminating the need for a water pump, a fan, or a radiator. The complete plant is 20 inches wide, 25 inches long, and 30 inches high.

For further information write to the Lynn Engineering Co., Russ Bldg., San Francisco 4, Calif., or use the Request Card at page 18. Circle No. 6.

Dual compactors

■ The Seaman-Gunnison Duo-Pactor, combining pneumatic and rigid-roll compaction, is described in a mailing piece from the company. According to the literature, the operator can use either of the two rollers independently or together. The specifications chart lists the pneumatic rolling width at 86 inches and the steel roll-

ing width at 72 inches.

To obtain the mailing piece write to the Seaman-Gunnison Corp., 2763 27th St., Milwaukee 15, Wis., or use the Request Card at page 18. Circle No. 81.

Trenchers, backfillers

■ A bulletin from the Cleveland Trencher Co. shows the firm's line of trenchers, backfillers, and diggers. Outstanding in the trencher line is the Model L-270, a ladder-type unit introduced this year. Complete specifications, brief descriptions, and job photos are included.

To obtain Bulletin No. L-101 write to The Cleveland Trencher Co., 20100 St. Clair Ave., Cleveland 17, Ohio, or use the Request Card at page 18. Circle No. 48.



AID IN CLEARING a heavy fall of snow last January—the worst in England in 20 years—came from H. Leverton Co., Ltd., the Caterpillar dealer in Spalding, Lincolnshire. By mid-morning of the first day, main roads were clear, thanks to the intensive use of DB's and a D4 tractor.

E concrete form panels

...cost less
than a penny
per poured
surface foot!

HIGH RE-USE FACTOR MAKES THIS MIRACLE OVERLAD FIR PLYWOOD YOUR IDEAL MATERIAL...

Forty re-uses—not unusual for Harborite—will cut your cost to less than 1¢ per poured surface foot...and contractors have reported over 100 re-uses for forms made of Harborite! Rigid, abrasion-resistant Harborite panels produce glass-smooth concrete...joints and fins are cut to a minimum...stripping is easier, faster! The super-smooth Harborite overlay will not run, bleed or discolor concrete...it has a special affinity for oil and other form finishes. Available in oversize panels and standard 4' x 8' size...in any thickness.

**WITH HARBORITE YOU GET
MIRROR-SMOOTH SURFACES...
FASTER STRIPPING...MINIMUM FINISHING...
AND LOWEST COST TOO!**

FIGURE YOUR OWN SAVINGS!

	PLYFORM	HARBORITE	MATERIAL NOW USE
WAREHOUSE COST PER FOOT*	\$.242	\$.308	
AVERAGE NUMBER OF RE-USSES	10	40	
COST PER Poured SURFACE FOOT	\$.0242	\$.0077	

*Prices vary in different areas.

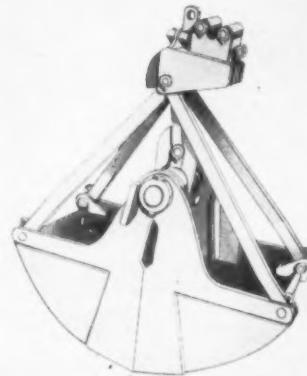
INDIANAPOLIS • JACKSONVILLE • LOS ANGELES • SAN FRANCISCO • SEATTLE • TAMPA • other major cities
For more facts, use Reader-Reply Card opposite page 18 and circle No. 297

OCTOBER, 1956

Rehandling bucket works with single arm lever

■ A new rehandling clamshell bucket that opens and closes with a single arm lever is announced by the Yaun Mfg. Co. The rehandler has the same steel bushings and roller bearings in the main shaft as larger digging buckets.

The main-shaft assembly bearings can be replaced on the job



The Yaun rehandling clamshell bucket is available in 10-yard capacities.

without disassembling the bucket, the manufacturer reports. Teeth can be furnished for use in digging operations.

Available in $\frac{1}{4}$, $\frac{3}{8}$, and $\frac{1}{2}$ -yard capacities, the Yaun rehandler can be adapted to gravel and loose sand operations. For this type of work, it has been designed with an extra-high-level water capacity. It can also be obtained in $\frac{1}{2}$ to 10-yard capacities on request.

For further information write to the Yaun Mfg. Co., P. O. Box 1508, Baton Rouge, La., or use the Request Card at page 18. Circle No. 24.

Syntron appoints two

New salesmen for two of the firm's district offices have been appointed by the Syntron Co., Homer City, Pa. Robert J. Walker will be associated with the Syntron Central Pennsylvania Sales Co., and will handle the sales of all types of vibratory equipment in 16 Pennsylvania counties.

Power tools and portable equipment will be sold by H. J. Bertollet from the Syntron Reading Sales Co. office.



Excavating a Caterpillar D4 tractor from the ice got under way when a gasoline-powered chain saw was used to cut through the ice. In the background is the Eureka Weather Station.

winter
work



Ice-bound tractor goes back on the job

A Caterpillar D4 tractor, recovered last spring, showed surprisingly slight damage from the six months it had been buried in sea ice 589 miles from the North Pole. The tractor had been

used by the men at the Eureka Weather Station on the west side of Ellesmere Island, NWT, Canada, to cross an ice-covered fiord to pick up a load of ice to be used for cooking and drinking water.

Though fairly thick, the ice of the fiord gave way when the D4 was 200 yards from shore on the return trip. The ice was too broken up for other tractors to safely attempt to retrieve it at the time of the accident.

In the spring, however, a gently sloping ramp about 40 feet long was cut to the front of the tractor. Ice was then excavated from around the tracks, and when they were free, the tractor was jacked up, covered with a tarpaulin, and heated for several days.

Flooding had been anticipated at this stage of the operation; but a pool of water, that had stemmed from an active tidal crack in the ice and ran along the track, threatened the job. Had the excavation flooded, the tractor could not have been freed.

After snow drifts up to 3 feet deep had been cleared away by a D4 with a bulldozer, a chain saw was used to cut the ice. Cold and high winds hampered progress, but within a week, one track had been completely cleared. Just as the clearing of the last side was being completed, water broke through and rose at such an alarming rate that a small pump had to be used to check the flow. Carving out the ramp was done with a gasoline jackhammer.

The tractor was then covered with the tarpaulin, and a Herman Nelson heater, placed in the hole, warmed the tractor to free it from the ice. Once the ice had melted, two D4's were hitched to the tractor and the ice-bound unit was moved onto the level ice.

Water had penetrated the crankcases and all gear cases, but there had been no corrosion from salt water. A new battery, starter, generator, carburetor, battery cables, and fuel and oil filters were installed, but no damage was evident to the working parts of the unit. The rear lights, light switch, and ammeter must also be replaced.

No leaks or cracks in castings were discovered, and the tractor now operates satisfactorily.

The recovery was under the general direction of J. Glenn Dyer, chief of the Polar Operations Project of the U.S. Weather Bureau, and Floyd Wilson of Denver, Colo. The entire recovery operation took only ten days.

CARSET JACKBITS

LAST LONGER, DRILL FASTER THAN EVER



...when you keep them sharpened, with machine precision, on the new

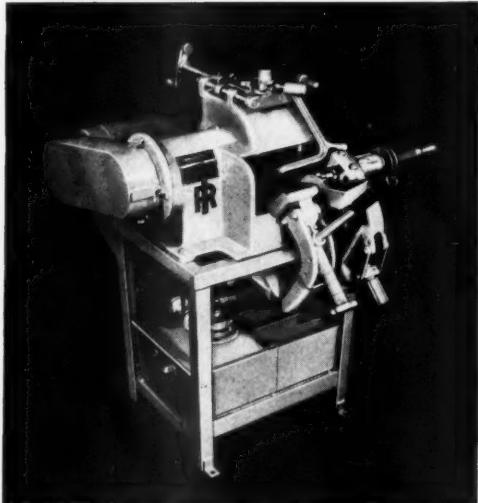
JC-3 JACKBIT GRINDER

A NEW Ingersoll-Rand Carset Jackbit has no equal for sustained high drilling speed and maximum bit life in practically any type of rock.

To maintain this "good as new" performance after resharpening, it's important that the cutting faces be ground without unnecessary waste and to the proper shape. Although hand grinding can be used successfully where the number of bits sharpened per day is limited, higher production calls for a faster and more precise method of resharpening.

These requirements are met to excellent advantage with the new JC-3 Jackbit Grinder. All bit surfaces are ground with machine precision to exactly the right shape for maximum drilling efficiency — more quickly, easily and accurately than can be done by hand grinding.

While the JC Grinder has many new and improved features, it has the same basic design that has proved itself in over 20 years of service. All



bearing and wearing surfaces are protected against the entrance of abrasive grits, virtually eliminating bearing maintenance costs. The Jackbit Grinder can be purchased complete with cooling and gauging equipment and electric, air-motor or gasoline-engine drive — or it can be obtained with only that equipment needed for any particular job. To get the most out of your Carset Jackbits, ask your I-R representative for complete information on this time-saving, cost-saving Jackbit Grinder.

15-416

FREE WALL CHART: HOW TO GRIND CARSET JACKBITS

Ingersoll-Rand, Rock Drill Dept., 11 Broadway, New York 4

Please send me illustrated wall chart, Form 4121, showing step-by-step instructions for the proper resharpening of Carset Jackbits.

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For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 298

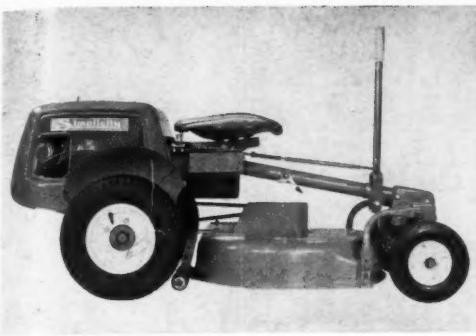


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ROCK DRILLS • COMPRESSORS • AIR TOOLS • CENTRIFUGAL
PUMPS • TURBO BLOWERS • CONDENSERS • DIESELS

GAS ENGINES



New self-propelled mower allows for rough ground

A self-propelled mower incorporating a principle that allows the mower attachment to float free and pass over rough ground without "scalping" the grass is available from the Simplicity Mfg. Co. The rig also features a "joy-stick" steering control that automatically stops the mower when it is released by the operator.

The Wonder-Boy mower can handle a 24-inch rotary blade, a 20-inch reel blade, a two-gang mower assembly, a 21½-inch roller, or a 30-inch adjustable snowplow-grader blade. It has a 3.6-hp rear-mounted engine with a reverse gear.

For further information write to the Simplicity Mfg. Co., Port Washington, Wis., or use the Request Card at page 18. Circle No. 35.

Muriatic acid substitute has low corrosion rate

A new solution for removing lime and mortar from brick and other masonry work has been developed by the Berman Chemical Co. The solution is said to have the same cleaning qualities as strong liquid acids but with the added advantage of a low corrosion rate.

The Berman chemical is a powder that is mixed with water, the surface to be cleansed determining the mixing ratio. Though it has an acid base, the manufacturer reports that it does not irritate the skin and can be washed away with water.

According to the manufacturer, it does not harm or discolor stainless steel or aluminum doors or windows, nor copper, chrome, or nickel trim. It does not generate any strong fumes.

For further information write to the Berman Chemical Co., 840 Superior St., Toledo 4, Ohio, or use the Request Card at page 18. Circle No 155.

Angling bulldozer

An angling bulldozer to be used as a snowplow is featured in a mailing piece from the manufacturer, Pippin Construction Equipment, Inc. According to the specifications, the moldboard is 19 inches high and 6 feet long, and can turn in an angle of 12½ to 25 degrees right or left. The parts of the unit are pictured and briefly described. Accessories are listed.

To obtain the mailing piece write to Pippin Construction Equipment, Inc., White River Junction, Vt., or use the Request Card at page 18. Circle No. 76.

The Wonder Boy self-propelled mower has a rear mounted, 3.6-hp engine with a reverse gear.

Line of cranes

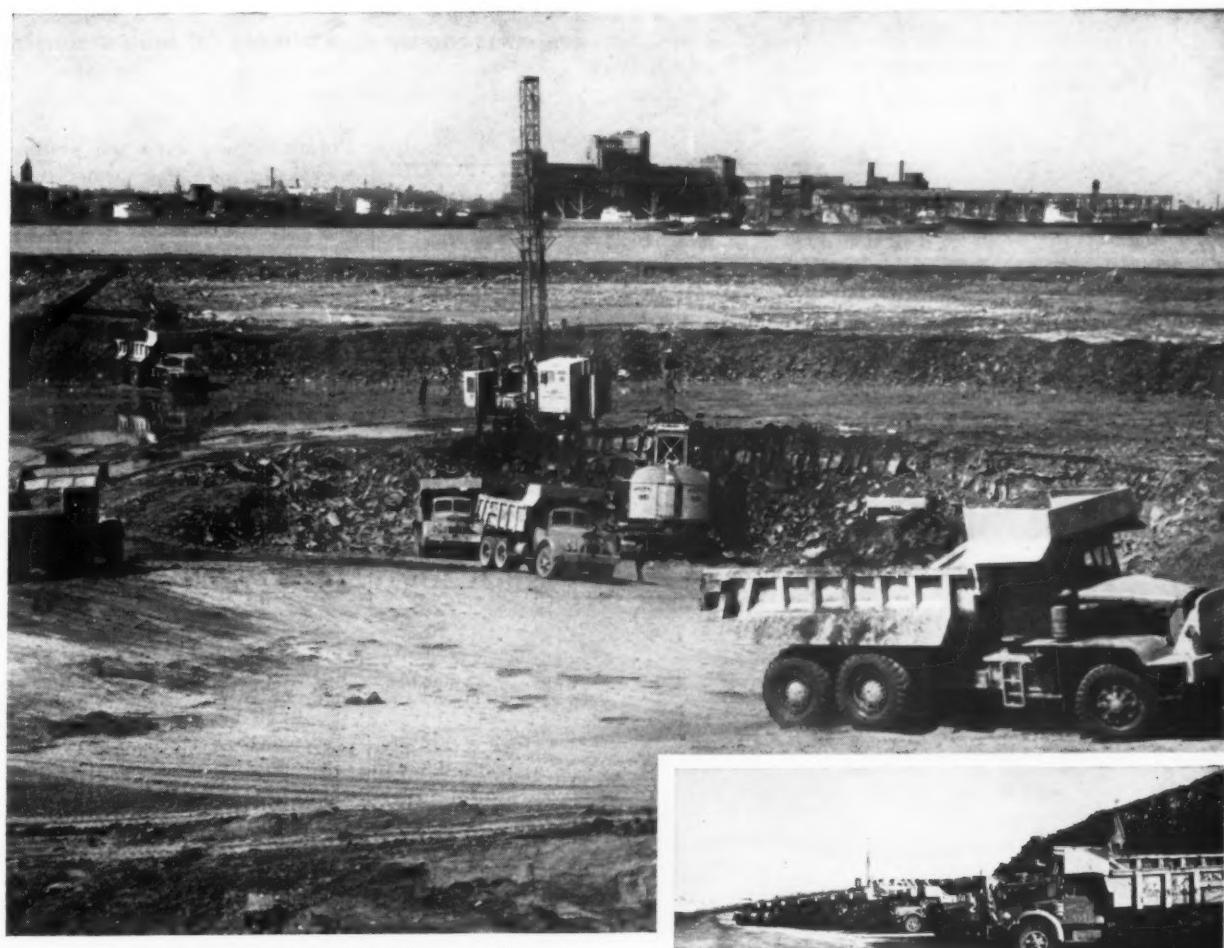
Koehring's complete line of crawler and rubber-tire-mounted cranes are pictured in a bulletin. The Model 205 truck-mounted crane in the 15-ton class is shown handling materials of various sizes and shapes. Action shots of the crawler cranes show models in the 10 to 79½-ton class. A brief description accompanies the picture of each crane.

To obtain Bulletin K474 write to the Koehring Co., 3026 W. Concordia

Ave., Milwaukee, Wis., or use the Request Card at page 18. Circle No. 181.

Firm changes name

The David White Co. has changed its name to the David White Instrument Co. The addition of the corporate name was made to better identify the firm for future operations in the engineering, construction, and photographic fields. The company, located in Milwaukee, Wis., manufactures surveying instruments.



Macks are popular on the St. Lawrence Seaway... and for good reasons—their bonus capacities, sure-footed traction, and dependable power pay off. (Right) A Mack lineup ready for work on...



The St. Lawrence Seaway... a big job for big trucks...

... a job for a lot of heavy-duty Macks—that's the conclusion of Miron & Freres, Limited, the contractor working on the Cote St. Catherine section of the St. Lawrence Seaway. They are using Mack off-highway dumpers exclusively, over 30 of them, for their big earth-moving job. And their big Macks are paying off for them in real hauling efficiency—plenty of power for big payloads with

minimum maintenance costs... even during winter operations.

Like these big dumpers, all of Mack's heavy-duty construction chassis for concrete mixers, tractors, and flat bed trucks can be relied upon for outstanding performance. Rugged construction, dependable power, low maintenance, as well as such features as Mack's Balanced Bogie and ex-

clusive Power Divider—the four-wheel tandem drive that delivers power only to the wheels with traction—make Macks the logical choice for getting jobs done on schedule, and at a profit.

For full details, see your Mack Branch or Distributor. Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd.

MACK
first name for
TRUCKS

For more facts, use Reader-Reply Card opposite page 18 and circle No. 299

winter
work



Main arteries had been cleared for traffic 24 hours after the storm and now, a week later, banks of snow along the roadside show the amount of drifting that occurred across the county roads.

C&E Staff Photos

Abandoned autos give snow crews biggest trouble in road clearing

**Experience with gale winds and drifting snows
prepares county department for winter battle**

No matter how severe this winter's snowstorms, the Suffolk County Highway Department in Long Island, N. Y., is prepared to cope with the job of keeping the roads clear. Even most pessimists feel that snowfalls during the coming winter could be no worse than the two that ushered winter—officially—out of the New York metropolitan area last March.

The storms—considered the worst in 50 years—hit hardest at Suffolk County on the easternmost tip of Long Island. Maintenance men, with little idea of what was to come, were

busy removing snow fences from fields along roads so that spring plowing could start. Others were preparing snow-fighting equipment for summer storage when the first storm struck, Friday morning, March 16.

The freak storms came on so fast that they hardly allowed time for storm alerts to be sent from Albany, N. Y. to the State Highway Department's district office in Babylon, Long Island, which, in turn, notifies counties under its jurisdiction. Counties pass on the alert to towns and cities.

Almost as soon as snow started fall-

SONOTUBES®
permit backfilling before pouring
and save time and money!

St. Marks Evan. Luth. Church,
St. Paul, Minn. Sheehy Constr.
Co., contractors. Albert
Plagens, Architect.

SONOTUBE®
FIBRE FORMS
for round columns of concrete

In the construction of this church in St. Paul, Minn., the footings for the supporting round columns of reinforced concrete were set well below grade. The use of low-cost SONOTUBES for column formwork made backfilling possible before pouring because stripping and recovery of forms was unnecessary. The SONOTUBES required no bracing as the backfill held them in place. Ready-mix trucks were able to move over the backfill to pour the columns, eliminating the necessity of hoisting the concrete to make the pour. The backfilling, before pouring, resulted in the use of less equipment, labor and material and stepped up construction time.

Low cost SONOTUBE Fibre Forms are approved by architects and engineers and widely used by contractors everywhere.

For a fast, economical method of forming round columns of concrete for underpinning, pile encasement, supporting columns for a variety of structures—use SONOTUBE Fibre Forms. Available in sizes from 2" to 48" I.D., up to 50' long. Order in specified lengths or saw to your requirements on the job.

Use Sonoco's patented "A-Coated" SONOTUBES for finished columns. Wax-coated also available.

For full technical information and prices, write

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PRODUCTS COMPANY**

CONSTRUCTION PRODUCTS DIVISION

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LOS ANGELES, CAL.

5955 SOUTH WESTERN AVE.

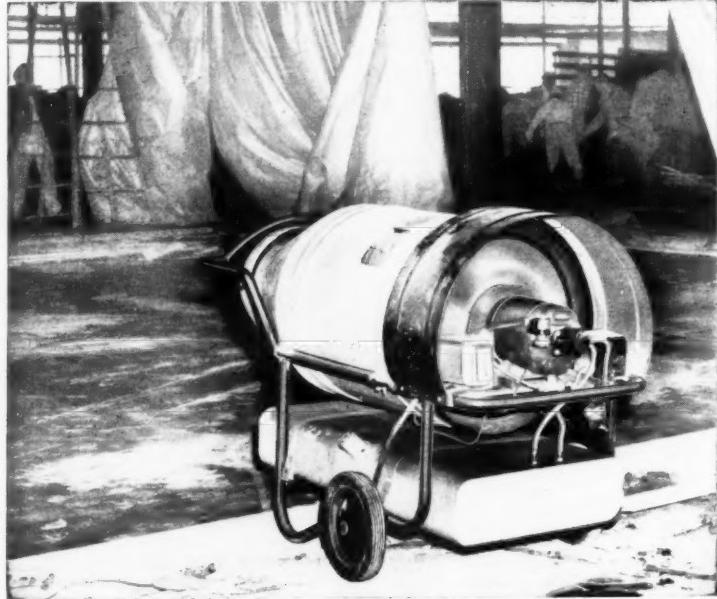
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For more facts, use Reader-Reply Card opposite page 18 and circle No. 300

100



Here's the business end of a heater

When you buy a heater, don't stand in front of it; stand behind it. All heaters are hot in front, but their value to you depends on the rear end.

If you want circulated warm air indoors, powerful spot heating outside, if you want to dry plaster, pour and cure concrete and keep the job rolling in any weather, you need a Master heater.

It's a compact furnace-on-wheels, with starter, fan, thermostat, filter, pressure atomizing burner, insulated fire chamber and all. It rolls into place, starts at the flip of a switch, needs no vent and burns low cost kerosene or fuel oil.

We think it gives you more good heating for your money than any other type heater. Write for the free folder "Summer Warmth in Winter" or call your Master Distributor and see if you don't agree.

MASTER VIBRATOR COMPANY
301 Stanley Ave., Dayton 1, Ohio

For more facts, use Reader-Reply Card opposite page 18 and circle No. 301

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CONTRACTORS AND ENGINEERS

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A Hough Payloader cleans up the snow that has been banked along the roadside. These rigs did their most efficient work in tight corners and along streets.

ing, men and equipment, following the usual procedures, were out sanding the roadways. But by 11 a.m. Friday, it was noticed that the snow was sticking to the roadways and plows and special equipment were brought into play. By Friday night, a total of 6 inches of snow had been deposited, and northeast winds, reaching gale force, drove the snow and caused excessive drifting. Drifting was so bad that as soon as a road was plowed the operation had to be done all over again to keep the stretch open.

Clear drifts

Equipment operators worked through Friday night, and by Saturday noon had all the roads cleared. But this did not end the job. Maintenance forces had to free automobiles that had been left along the shoulders of the road. These vehicles, which either had stalled or were abandoned when drivers decided that roads were impassable, had acted like snow fences during the storm, causing drifts to pile up. The work of freeing automobiles and removing snow banks on a total of 4,500 miles of town, county, and state roads continued Monday through Saturday. Then it happened again.

Snow began falling Sunday morning, and it kept falling. Drivers were warned to stay off the roads unless trips were vitally necessary. Men were called from home to get snow-removal

equipment back in operation.

County and township crews worked continually to keep roadways opened, the county having a total of 47 pieces of its own equipment, together with 15 rented rigs. Among the equipment

were Four Wheel Drive Walter trucks equipped with snowplows and wing attachments, Sno-go snow removers capable of digging into deep drifts and blowing snow a distance of 100 feet, many front-end loaders that could dig into snow banks and load dump trucks, and regular dump trucks fitted with snowplows.

While these machines were clearing the 500 miles of county and state roads, which are the responsibility of the county, more than 3,800 miles of road were being cleared by the townships. Township equipment far outnumbered county rigs, because of the

larger mileage involved. The town of Brookhaven, for instance, has more than 1,300 miles of road to keep clear—a total almost triple that covered by the County Highway Department.

Both county and towns cooperated closely during snow-removal operations. The county, under a contract with the state, is responsible for removing snow and ice from 309 miles of state roads in Suffolk. Portions of these routes are subcontracted to the townships, which can handle the small strips of state roads in and about their borders easier than could the county. Under this agreement, the



Photo and Report by Interstate Industrial Reporting Service

Georgia red clay—often studded with quartz and granite—"routine" for Cleveland owner

CONCRETE CONSTRUCTION CO. of Atlanta, Georgia, recently completed a trench excavating job for the installation of a gas main in the North Druid Hills near Atlanta. "This area," says a report from C. V. Lanier, field superintendent for Concrete Construction, "contains quartz and—since the spine of Stone Mountain underlies the district—chunks of granite. But, using one of our Cleveland 95's, we consider it just a routine job." Concrete Construction currently

operates nine Cleveland's, three 92's, four 95's and two 110's. Mr. Lanier's report continues:

"Trencher operations constitute the basis of our business—and to us that means Cleveland's. Mechanically, we have never had a Cleveland halt in the field."

Performance like this proves again that Cleveland's dig *more trench . . . in more places . . . at less cost*. Talk it over with your Cleveland distributor.



SPRAY STARTING FLUID, with the propellant used in the pressurized can, insures quick starts for Diesel and gasoline engines in temperatures as low as 65° F. and withstands 180° F. heat.

This combustible propellant was developed after two years of research.

SPRAY STARTING FLUID pressurized with our inert propellant is absolutely safe and odorless in storage.

SPRAY STARTING FLUID is sold through distributors, wholesalers and their dealers located throughout the United States and Canada.

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For more facts, circle No. 302



Everywhere

THE CLEVELAND TRENCHER COMPANY

20100 ST. CLAIR AVENUE • CLEVELAND 17, OHIO

For more facts, use Reader-Reply Card opposite page 18 and circle No. 303

state reimburses the county and the county reimburses the towns, but the county is held responsible for the work.

Traffic complicates work

Northeast gale winds kept whipping the snow as it fell all day Sunday, Sunday night, and part of Monday, causing it to drift 6 to 12 feet against the roadside snowbanks built up during Friday's clearing operations. The 14-inch snowfall, sizable but not frightening, made snow removal difficult because drifting got out of hand. The best way to plow was to go over a road fast, then go back and clear it again, for by that time, the stretch was again covered with snow.

If there had been no traffic, this would have been possible. But motorists, even more than the snow itself, gave snow crews their greatest difficulty. Disabled, stalled, or abandoned vehicles were scattered along the roadside, making it impossible for snowplows to operate continuously and efficiently.

The biggest hindrance cropped up repeatedly as motorists abandoned their vehicles, clogging the roads. In many instances, the jams assumed a pattern. Two-way traffic was stopped so that snowplows could clear a portion of the road, and drivers were instructed to remain where they were until the plow cleared a lane in one direction and then made a return trip to clear the adjacent lane. But motorists, becoming impatient, followed close behind the plow on its initial trip, and, if the plow were stopped by a deep drift across the roadway, the operator could not back it up or maneuver. Almost invariably, autos tried to pass the plow and got stuck in the adjacent lane, blocking traffic headed in the opposite direction. At this point, when neither plow nor autos could move in any direction, automobiles were abandoned and the plow was lost to snow-fighting forces until a second plow could be dispatched to the rescue. County regulations do not permit stranded autos to be towed away, even if they are blocking a roadway, and motorists slowed snow removal further by taking their time in reclaiming cars.

State of emergency

By the time the snow stopped on Monday night, road communications had been completely cut off, food deliveries halted, and a state of emergency declared by Suffolk County. Snow-fighting equipment, hampered by stranded cars along the roadways, remained working throughout the night and Tuesday morning to clear roads essential for food deliveries. By Tuesday night, the powerful FWD Walter trucks and Snogo machines had opened vital links and had started working on major arteries. Front-end loaders were used advantageously in tight corners, on streets, and along banks, loading dump trucks with snow. Though most of the roads had been cleared and were passable after 24 hours, snow removal operations continued for about a week.

All during this time, the work was coordinated by an RCA mobile two-

way radio setup, operating on a frequency of 37.98 megacycles. Two base stations, one in Yaphank and one in Port Jefferson, the location of the County Highway Office, were used to direct the clearing operations. A total of 40 radios were available for use, mainly in cars, trucks, pickups and the Walter snowplows.

Personnel

Two men playing important roles in this emergency were Wayne G. Williamson, the supervisor of maintenance, and Edward W. J. Scott, the supervisor of state snow and ice control. Albert Cass is superintendent of highways, and William S. Matsunaye, Jr., deputy superintendent for Suffolk County.

THE END

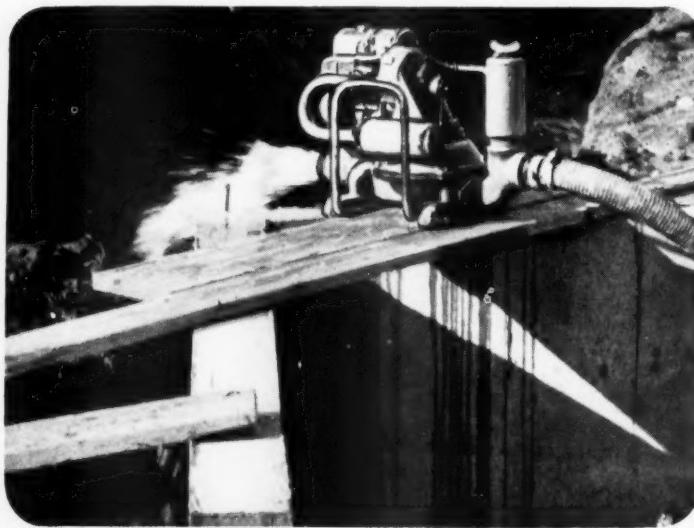
Starting fluid available in pressurized container

Spray starting fluid is available in a pressurized container that will operate effectively in temperatures as low as minus 65 degrees and will withstand storage temperatures as high as 180 degrees, according to the manufacturer. The fluid is used as an aid in starting gasoline and diesel engines in extremely cold or damp weather.

The starting fluid is teamed with a completely combustible propellant to eject it from the pressurized can. The propellant has the same wide temperature range as the fluid. Also, the propellant is inert, making it completely safe for storage, the manufacturer points out.



For further information write to Spray Products Corp., P. O. Box 584, Camden 1, N. J., or use the Request Card that is bound in at page 18. Circle No. 26.



It's here!

**The new heavy-duty
diaphragm pump
that's light enough
to carry**

Here's the diaphragm pump that goes most easily to the job and does more when it gets there. Specifically designed for continuous, heavy-duty work, this Homelite pump will dewater an area at a 5000 g.p.h. clip, then keep right on going to handle seepage in the thickest mud, muck and sand. Yet, because it weighs only 120 pounds, it gets to the job fast . . . even over the roughest terrain.

The entire unit is built for long, trouble-free operation. Manual throttle control adjusts engine speed for full-capacity pumping or handling small seepage flow . . . gives greater fuel economy and prolongs engine life. Ball and roller bearings protect engine and pump from excessive wear. Totally enclosed reduction gears run in oil. Tough, oil-resistant diaphragm can be easily replaced in ten minutes right on the job.

For more information or a demonstration on your job, write or call your nearest Homelite representative.

NEW HOMELITE *Carryable* DIAPHRAGM PUMP

Model 20DP3-1 has guaranteed total lift up to 28' and total head up to 50', including friction.

HOMELITE

A DIVISION OF TEXTRON INC.
5910 RIVERDALE AVENUE
PORT CHESTER, NEW YORK

For more facts, use Reader-Reply Card opposite page 18 and circle No. 304

CONTRACTORS AND ENGINEERS

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g.p.h.

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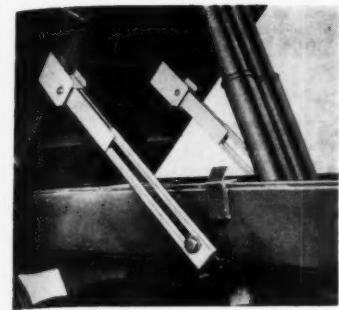
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OCTOBER,

The new check bars on Galion trailer dumps prevent body overtravel when sticky loads are dumped.



New check bars protect underbody hoist cylinder

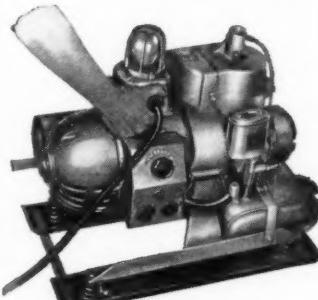
■ A new type of check bar is now standard equipment on all Galion trailer dumps with underbody hoist. The bars, used in pairs, are said to protect the hoist cylinder by pre-

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Carryable
Construction
Equipment



SELF-PRIMING CENTRIFUGAL AND DIAPHRAGM PUMPS

Sizes: 1½" to 3" — capacities to 15,000 g.p.h. for dewatering and water supply.



ELECTRIC GENERATOR SETS FOR TOOLS AND LIGHTS

Complete range of sizes and voltages up to 5,000 watts.



LIGHTWEIGHT POWERFUL ONE-MAN CHAIN SAWS

Complete line of saws with clearing and brushcutter attachments for every woodcutting job.

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PORT CHESTER, N. Y.

For more facts, circle No. 305

OCTOBER, 1956

venting over-travel of the body when dumping sticky loads.

Pulling out or bellmouthing of the cylinder, caused by the body being raised beyond the maximum dump angle when "frogged" to dislodge a load, is prevented by the device, the manufacturer states.

Hinged to the longitudinals and sliding on 2½-inch pins welded to the chassis, the bars are at a 90-degree angle to the body understructure at the maximum dump angle. They swing up parallel to the chassis frame when the body is down.

For further information write to the Galion Allsteel Body Co., Galion, Ohio, or use the Request Card at page 18. Circle No. 36.

Concrete hole drill

■ The Mechanized Mole cuts ½ to 24-inch holes in concrete, asphalt, and granite, according to a bulletin from Molco Drilling Machines, Inc. A series of job photos show the unit cutting test cylinders of new concrete, and cutting holes in concrete for pipe conduits and other installations. The folder claims that the one-man-operated unit cuts 40 to 60 holes per 8-hour day.

To obtain the folder write to Molco Drilling Machines, Inc., 1100 20th St. N. W., Washington 6, D. C., or use the Request Card at page 18. Circle No. 66.

Dust collector unit

■ The Cyclo-trell multiple-tube dust collector for use in asphalt plants is described in a catalog from Research-Cottrell, Inc. According to the catalog, the aerodynamic design of the inlet vanes increases collection efficiency; and the outlet vanes, positioned below the tube, decrease entry losses at the tube, thus increasing the capacity of the unit. Gas is cleaned by centrifugal force. The operation and construction of the Cyclo-trell is explained by drawings, cutaway views, and efficiency and capacity nomographs.

To obtain the catalog write to Research-Cottrell, Inc., 485 W. Union Ave., Bound Brook, N. J., or use the Request Card at page 18. Circle No. 79.

Calking, troweling mixes

■ Gaco neoprene caulking and troweling compounds for use in concrete and metal structures are detailed in a folder from the Gates Engineering Co. The compounds, applied cold to expansion and construction joints, are said to give a permanent, resilient, watertight seal which will not soften, loosen, or become brittle. A chart gives a description, recommended uses, and application instructions for neoprene calking, putty, and Tylasts.

To obtain the folder write to the Gates Engineering Co., P. O. Box 1711, Wilmington 99, Del., or use the Request Card at page 18. Circle No. 56.



DUSTED WITH SNOW, an International TD-18A lifts an International TD-6 in a Drott material-handling rack during a winter demonstration. The rack was specially designed for use by the U. S. Marine Corps.

The New LIGHT★HEAVYWEIGHT that's Winning Bouts Everywhere

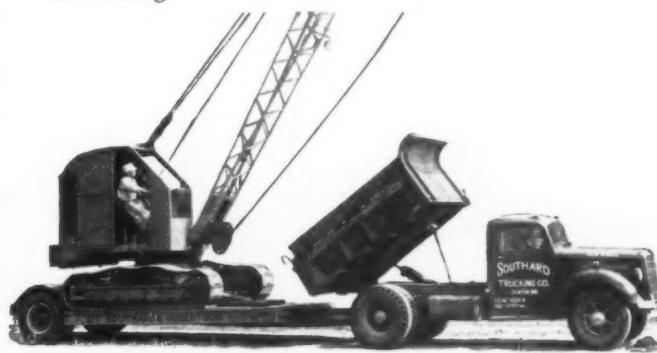


Rogers Brothers were among the very first to use alloy steel to obtain lightness with strength. They use it today in all main beams and in other positions where it is advisable.

Here is a comparatively recent Rogers development — a trailer designed primarily for lightness but with strength to haul loads reasonably in excess of its rated capacity.

It's priced right and is available in the popular capacities. The rear Type "T" horizontal rocking members are one of our most popular units.

Since almost every rigger and contractor should be able to use one of these trailers in addition to his present equipment, write today for complete information. Ask for the new catalog.



The Tagalong Trailer makes your dump truck a tractor.

Check
and
you'll
choose a
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EXPERIENCE
builds 'em.

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ALBION, PENNA.

Export Office: 50 Church St., New York 7, N.Y., U.S.A. Cable Address: BROSITES

For more facts, use Reader-Reply Card opposite page 18 and circle No. 306

KONKURE Concrete Curing Compounds



Spray application curing membranes for freshly finished concrete surfaces — meets all city, county, State and Federal specifications. Unexcelled concrete moisture retention gives maximum strength concrete, minimizes concrete surface failures* or rainfall damage.

*In hot, dry areas, use of Konkure White is especially recommended.

GENERAL PURPOSE

KONKURE Clear — for curing concrete where retention of natural color is desired — a fugitive orange dye is used in Konkure Clear to insure application visibility — the color disappears within an hour.

KONKURE White — architecturally attractive, white pigmented, to minimize surface cracks resulting from exposure to light and heat rays in hot, dry areas.

KONKURE Black — an asphalt base waterproofing and curing compound competitively priced — also serves as a bonding agent for asphalt tile application.

KONKURE Gray — glare reducing — gray pigmented to minimize surface cracks resulting from exposure to light and heat rays in hot and dry areas.



TIFF-UP and LIFT-SLAB

KONKURE P. C. C. — a resin base curing compound and bond breaker combined — may be painted without treatment upon erection.

Write or Phone for Full Information

KONKURE COMPANY

6742 Stanton Avenue, Buena Park, California • Phone: LAWrence 2-2841

For more facts, use Reader-Reply Card opposite page 18 and circle No. 307

Save your tough digging jobs for

ERIE'S NEW EXTRA HEAVY DUTY BUCKET BUILT TO HANDLE SHOT ROCK AND SHALE



Erie's new extra heavy duty bucket is for those really tough jobs — where the going is rugged — materials like shot rock, hard pan and shale. In fact, the new extra heavy duty model will come up with a mouthful of anything it can sink its teeth into. It hasn't been stopped yet.

All Erie clamshells are designed to bite hard and deep. The wide angle drop, the tremendous closing power of lever arm action, the multiple reeving and the big, sharp, manganese teeth — all these make a combination that really penetrates.

If you've a rough job coming up, or if you're tangled with something your present equipment can't handle, then you're talking our language. You need a new Erie Extra Heavy Duty clamshell. Why not learn more about this latest addition to the Erie line? Do it today.

These features make ERIE the bucket experienced operators prefer:

1. Top closing power from block and tackle, plus lever arm construction, plus precision balancing.
2. Manganese steel teeth and high carbon steel lips that bite up full payloads of even toughest clay and gumbo.
3. Rigid, one-piece, welded head that shrugs off bumps and jars. No shimmy. No wobble.
4. Two-line, continuous reeving. Adds up to 50% to cable life. Less down-time for reeving.
5. Low headroom for fast work in tight quarters; low center of gravity for easy positioning.

For catalogs, write Dept. CE106



ERIE STRAYER Co.

32106 GEIST ROAD

ERIE, PENNSYLVANIA

Makers of Extra Light, Light, Standard and Wide Rehandlers, General Purpose Heavy Duty, Extra Heavy Duty, Electric and Mechanical Hook-on Clamshells.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 308

Testing device safeguards men from gas fumes in enclosed area



When concrete placement on a Brooklyn printing plant stretched into the winter months, Turner used canvas to shield the building while coke-burning salamanders kept the air warm inside the enclosures.

When Turner Construction Co., New York, N. Y., started working on a reinforced-concrete printing plant in Brooklyn last year, it hoped to get the job done before cold weather arrived. But though pouring was started early enough so that concrete work would be finished during the fall, unforeseen difficulties held the job up, and winter's sub-freezing temperatures found a lot of the concrete work still to be done.

Like many other contractors who find concrete-placing operations stretching into the cold weather,

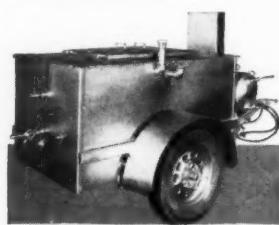
Turner decided to drape tarpaulins outside the building to keep out the biting wind coming off the East River, and use salamanders, taken from its equipment stock in Hackensack, N. J., to keep pours warm.

Check carbon monoxide

When the flueless heating devices were used, safety director F. M. Livingston made sure that one additional operation was scheduled for the project. Though there was enough ventilation inside the enclosures to prevent dangerous concentrations of

White

HEATING KETTLES FOR SAFER MELTING OF BITUMINOUS MATERIALS



Tool Heaters

Surface Heaters

Special F-10 Compound Kettle

Torches and Burners



Capacities from 80 to 325 gallons. All equipped with exclusive FIRE PROOF TOP (hinged tops available for roofing use). Operator and equipment are protected from flash fires. Complete line of accessories optional. Choice of kerosene and propane burners.

White

MANUFACTURING COMPANY

ELKHART 9, INDIANA

For more facts, use Reader-Reply Card opposite page 18 and circle No. 309

CONTRACTORS AND ENGINEERS

carbon a regu each of protect These the T with a tester, placeat bulk th The a Turner metric ing pl

winter
work

**Constant checks show concentration
of carbon monoxide in the air
as salamanders operate inside
building during concrete pours**

carbon monoxide from being built up, a regular check of air surrounding each of the salamanders was made to protect workmen inside the building.

These checks—a safety policy of the Turner company, were made with a Colorimetric carbon monoxide tester, a device consisting of a replaceable indicator tube, an aspirator bulb that draws air samples through

The assistant superintendent of the Turner Construction Co. uses a Colorimetric CO tester on the Brooklyn printing plant job.



the tube, and a revolving color scale. The man making a check to see if an area is free of carbon monoxide simply broke the sealed ends of a new detector tube and inserted the tube in the holder of the testing device. Then, depressing and releasing the bulb, he drew an air sample through the tube. The tube contains a silica gel impregnated with a complex silico-molybdate compound, and when an air sample containing carbon monoxide passes through the tube, the yellow gel turns green.

If the concentration of carbon monoxide in the air is high, the gel turns a deep green; if the concentration of CO is slight, the color will be of a lighter shade. Mounted directly beside the tube is the revolving color scale with varying shades of green printed on it to show the degree of carbon monoxide concentration in the air. Comparing the color of the gel with the color on the scale, the workman was able to determine the exact concentration of CO in the atmosphere.

If, at any time, the readings showed a dangerous concentration of carbon monoxide, that portion of the building in which the test was made was cleared of workmen and ventilated. Additional checks were made before the tarps were re-set and men allowed to return to work.

THE END

Anthes
FLAME-GUARD
the torch with the
SQUARE BURNER

NEW!

Construction Torch

Designed and constructed by Anthes, a firm famous for torch and flare equipment in the trucking industry. Here is a unit that is leak-proof, self-righting, long-burning—and ruggedly made to perform faithfully under the most adverse weather conditions. Baked enamel body and burner. With chains as shown. Write for complete data and prices. Anthes Force Oiler Co., Ft. Madison, Ia.

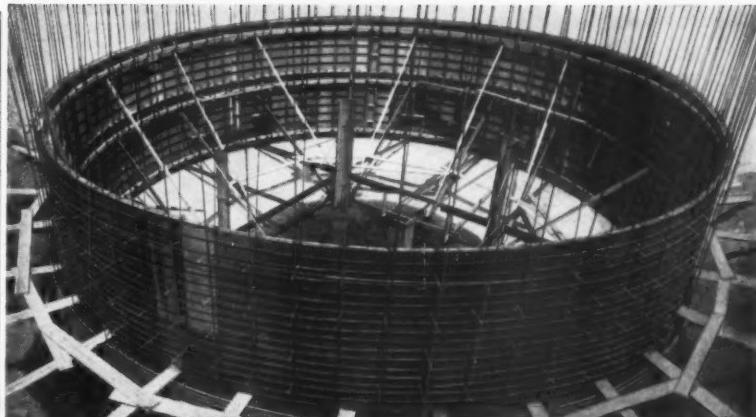
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ANTHES FORCE OILER CO.
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Anthes
WEATHERCAP
The protector of engines with vertical exhaust pipes

Areas open for distributors.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 310

OCTOBER, 1956



Setting Up Forms for Sewage Disposal Tank, St. Louis County, G. L. Tarlton Co., G. C.

Symons Forms for Curved Walls

Symons Rib panels are used with V-shaped fillers at each joint. Wedge-bolts secure the 3 pieces together and also hold the ties in place. Curved walers or 1" x 6" flat walers may be used for alignment. Contractors report savings of \$5,000.00 on forming costs of Sewage Disposal Plants. Symons offers a complete engineering service. Send plans for your next job and get complete layout and cost sheet—no obligation. *Symons Clamp & Mfg. Co.* 4251 Diversey Ave., Dept. K-6, Chicago 39, Ill.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 311



**JACKSON MULTIPLE COMPACTOR
PROVED ON HUNDREDS OF PROJECTS**

THE FASTEST, MOST ECONOMICAL AND VERSATILE MACHINE FOR OBTAINING 100% OF REQUIRED DENSITIES IN GRANULAR SOIL BASES, SUB-BASES AND ALL MATERIALS NORMALLY USED IN MACADAM BASES AND PAVEMENT WIDENING PROJECTS . . . LARGE FILLS AND SIMILAR JOBS. EACH OF THE SIX UNITS IN STANDARD WORKHEAD DELIVERS 4200 TWO-TON BLOWS PER MINUTE.

The Jackson Multiple will save you many, many times its cost in time and money. See it at your nearby distributor. His name and literature on request.



The photo above shows the perfect adaptability of the Jackson Multiple Compactor to pavement widening by grouping and towing individual compacting units at the side of tractor for one-pass, complete consolidation on practically every project. At left, see how the end unit on a base compacting job assumes the correct position without adjustment to contain and compact the base edge simultaneously with horizontal base compaction.

Furthermore, individual units may be fitted with operating handles and used exactly like the highly popular, standard Jackson Manually Guided Compactors for getting into the tight places that no other mechanical compactors will reach.

JACKSON VIBRATORS, INC. LUDINGTON MICHIGAN

For more facts, use Reader-Reply Card opposite page 18 and circle No. 312

Tractor's horsepower increased 12 per cent

■ A 12 per cent increase in horsepower rating for the D9 tractor has been announced by the Caterpillar Tractor Co. The flywheel horsepower of the crawler rig has been boosted from 286 to 320. The drawbar rating of the direct-drive model has been upped from 230 to 260 horsepower.

According to the manufacturer, the added horsepower is expected to give D9 users greatly increased productivity and lower cost per unit of production.

For further information on the Cat D9 write to the Caterpillar Tractor Co., Peoria, Ill., or use the Request Card that is bound in at page 18. Circle No. 140.



A 12 per cent increase in the horsepower rating of the D9 tractor has been announced by Caterpillar.

Machine makes concrete shapes at rate of 6 fpm

■ A machine that will form many kinds of concrete structural members on a continuous basis at the rate of 6 fpm is announced by the W. E. Dunn Mfg. Co. The Dunbeam machine is recommended for fabricating cored slabs, flat slabs, cored lintels, I-beams, T-beams, and coping.

Units up to 2 feet in width and 8 inches thick can be fabricated. Identical units can be formed simultaneously, side by side, as long as their total width doesn't exceed the 2-foot maximum.

The Dunbeam machine uses a continuous forming principle. The concrete is given shape by a special assembly within the machine. A high degree of compaction is attained



BETHLEHEM STEEL

For more facts, use Reader-Reply Card opposite page 18 and circle No. 313



BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

BUY BIG ORANGE AND YOU BUY THE BEST

Shackle Chain HOOKS

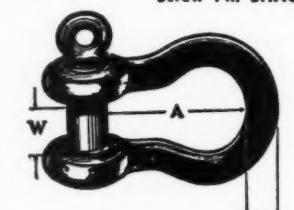
Use on "HIGH TEST" Chain
EXTRA STRONG

Even the pin is made of hi-strength steel and heat-treated.

GRAB HOOKS
Available for Chain
Sizes 1/4",
5/16", 3/8",
7/16", 1/2",
5/8"

SLIP HOOKS
Available for Chain
Sizes 1/4",
5/16", 3/8",
1/2"

ANCHOR and CHAIN
Screw Pin SHACKLES

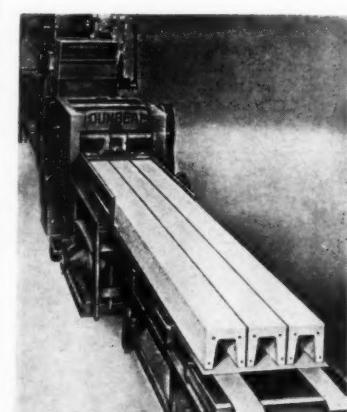


Forged of HI-STRENGTH STEEL
Available in sizes 1/4" to 2". EXTRA STRONG
—EXTRA TOUGH. Self-colored or galvanized

Order from your Distributor or Write
MIDLAND INDUSTRIES, INC.
Cedar Rapids, Iowa

For more facts, circle No. 314

CONTRACTORS AND ENGINEERS



Concrete lintels, three abreast, are fabricated at the rate of 6 fpm on the Dunbeam machine.

through a combination of vibration, directional rotary tamping, and mechanical troweling, according to the manufacturer.

For further information write to the W. E. Dunn Mfg. Co., 305 W. 24th St., Holland, Mich., or use the Request Card at page 18. Circle No. 141.

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OCTOBER



The Opperman Motocart will operate for eight hours on 1½ gallons of gasoline.

Three-wheel, 1/2-ton truck economical to operate

A three-wheel, ½-ton material truck that is reportedly able to operate for eight hours on 1½ gallons of gasoline is announced by the Linden Equipment Corp. The Opperman Motocart, an English import, is powered by a single-cylinder, 4-cycle, air-cooled engine driving the front wheel.

The low-loading, all-steel rig features one-man operation. Its materials bed is 17 inches above the ground. The dumping controls can be activated from the operator's seat or from the ground.

The short turning radius of the front wheel provides extra maneuverability in cramped quarters. It is said to be able to pull through mud, soft sand, and clay under a full load and can negotiate a 25 per cent grade from a dead stop without the drive wheel spinning.

For further information write to the Linden Equipment Corp., 1119 S. Robertson Blvd., Los Angeles 35, Calif., or use the Request Card at page 18. Circle No. 157.

New diamond blade for cutting block

A new diamond blade specification for low-cost cutting of concrete products has been announced by the Clipper Mfg. Co.

The Clipper CE-7245 is a super-bonded blade designed to give efficient, rapid cutting on block materials, while at the same time maintaining much longer blade life. It is said to be specially well suited for use on concrete block products containing slag, pumice, expanded shale, cinder, crushed stone, and river gravel.

For further information write to the Clipper Mfg. Co., 2800 Warwick, Suite 635, Kansas City, Mo., or use the Request Card at page 18. Circle No. 182.



PANEL with large window areas



WAREHOUSE

DANIEL CONSTRUCTION CO. PHOTO

Tilt-Up Costs Go Down

...with SUPERIOR "Pick-Up" Inserts, Brace Anchors, and Braces

When an outstanding Tilt-Up job rates an article in a construction publication you can be almost certain that SUPERIOR products were used. The reason is simple. SUPERIOR, as the pioneer in this field, developed designs that were thoroughly tested both in the laboratory and the field to assure safety with economical prices and low application costs.

These "Pick-Up" Inserts, Brace Anchors, and Adjustable Braces have been used and proven on literally thousands of projects, not a few of which were unique in design. With a background of such experience, the recommendation of our engineers as to location and types of Inserts and Anchors is reliable and valuable.

Avoid expensive crane delays, be assured of safety, and reduce your overall costs with these SUPERIOR products.

For further details request a copy of Bulletin TU-3

SUPERIOR CONCRETE ACCESSORIES, INC.

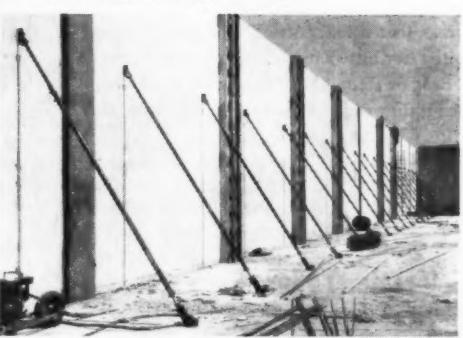
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New York Office
1775 Broadway
New York 19, N. Y.

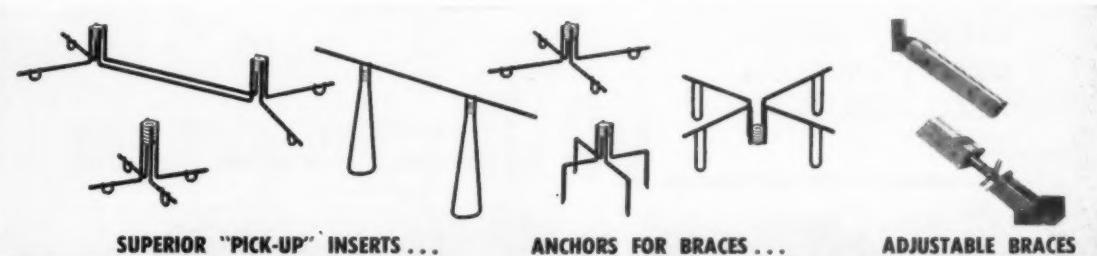
Pacific Coast Plant
2100 Williams St.
San Leandro, Calif.



57 TON SLAB being positioned



ADJUSTABLE BRACES used for quick and easy alignment of panels



SUPERIOR "PICK-UP" INSERTS ...

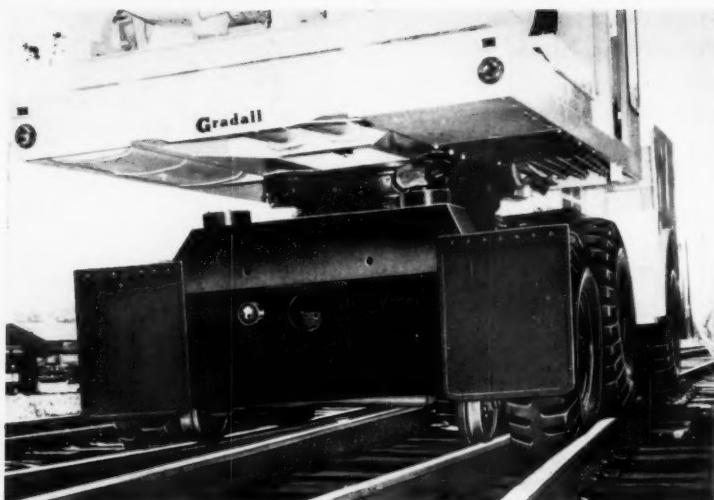
ANCHORS FOR BRACES ...

ADJUSTABLE BRACES

For more facts, use Reader-Reply Card opposite page 18 and circle No. 316

For more facts, circle No. 315

OCTOBER, 1956



A close-up of the rear of a Railroad Gradall equipped with optional wheels shows the action of the special rubber tires in climbing rails.

Optional flange wheels allow operation on rails

■ Self-compensating, flange guide wheels are now available as optional equipment for one-man operation of the Railroad Gradall, according to the manufacturer. With the wheels, the rig can travel over the highway or on standard railroad track. The raising or lowering of the wheels is done in a few minutes.

Air cylinders keep the wheels on the rails and compensate automatically as the special track-climbing rubber tires ride over crossings, frogs, and switches. The front guide wheels carry all of the front axle weight; the rear wheels carry 40 per cent of the weight, allowing the rubber tires to bear the other 60 per cent for

traction and driving power.

Controls for converting to or from the flange wheels are operated either from the upperstructure operator's cab or from the carrier's driving cab.

For further information write to the Gradall Division of the Warner & Swasey Co., 5701 Carnegie Ave., Cleveland, Ohio, or use the Request Card at page 18. Circle No. 37.

New aluminum elevator telescopes to 40 feet

■ A new aluminum material elevator, called the Roll-O-Hoist, has been announced by Engineered Equipment Inc. The elevator's channels are



Roll-O-Hoist material elevators use gasoline or electric power.

made of heavy-duty aluminum; the framework and other parts are constructed of steel.

The telescoping Roll-O-Hoist will extend to a maximum of 40 feet. Extensions are available for greater heights. Remote control, limit stops, and wheelbarrow-size side unloading platform are standard equipment. An automatic dumping bucket is available optionally.

The elevators are operated with gasoline or electric power. Capacity with a gasoline engine is 500 pounds at 85 fpm; with an electric motor the capacity is 500 pounds at 55 fpm.

For further information write to the Engineered Equipment, Inc., Waterloo, Iowa, or use the Request Card at page 18. Circle No. 13.

Weighing system

■ A continuous weighing system that electronically weighs materials on a conveyor belt is described in a bulletin from the Bell Automation Corp., a division of Bell Aircraft Corp. The three major components of the system pictured are a weighing platform, measuring equipment, and belt speed pickup. The function of the system is to measure material conveyed, to control the total flow or flow rate, and to maintain accurate proportioning of additives in continuous processing.

To obtain the bulletin write to the Bell Automation Corp., Division of Bell Aircraft Corp., 749 Monroe Ave., Rochester 7, N. Y., or use the Request Card at page 18. Circle No. 46.

ALL WELD AND A YARD WIDE

That's YAUN'S 3 YD. BUCKET

ALL Yaun products are ALL-WELDED, for more strength, with less dead weight. Smooth welds on bottom give clean dumping. Manganese teeth and cutting lips give digging power that lasts, bite after bite, job after job, year after year. All Yaun buckets, drag or clam, have Manganese steel wherever they hit the load; they dig and dump fast and clean, and have long useful life.

Sold by equipment distributors world-wide.

YAUN MAKES

DRAGLINE BUCKETS

Shell
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**CLAMSHELL BUCKETS
CONCRETE BUCKETS
IN ALL SIZES.**



YAUN MANUFACTURING CO.
BATON ROUGE, LOUISIANA

For more facts, use Reader-Reply Card opposite page 18 and circle No. 317

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OCTOBER

Transistorized mike for two-way radios

■ A transistorized reluctance-type microphone with printed circuitry, for use in base stations of two-way radio communications systems, has been announced by RCA. The station mike is a base-mounted version of the RCA transistorized mobile mike announced earlier this year. Its base is detachable so that it can be used in mobile setups.

The new station unit features a built-in transistorized preamplifier which permits direct interchangeability with carbon microphones. According to RCA, the preamplifier



The transistorized, reluctance-type microphone announced by RCA is designed for use in base stations of two-way radio communications systems.

affords improved intelligibility, voice quality, and reliability of mobile radio communications.

Other features of the unit include a minimum power requirement by the amplifier; a balanced feedback circuit that compensates for variations in load impedance, transistor gain, and microphone elements; an output impedance of 450 ohms; and a frequency response of 170 to 4,800 cycles per second.

For further information write to the Radio Corporation of America, Front and Cooper Sts., Camden 2, N. J., or use the Request Card at page 18. Circle No. 25.

Oil resistant hose can handle 200 psi

■ A lightweight oil-resistant hose that will handle air pressures up to 200 psi is announced by the Hamilton

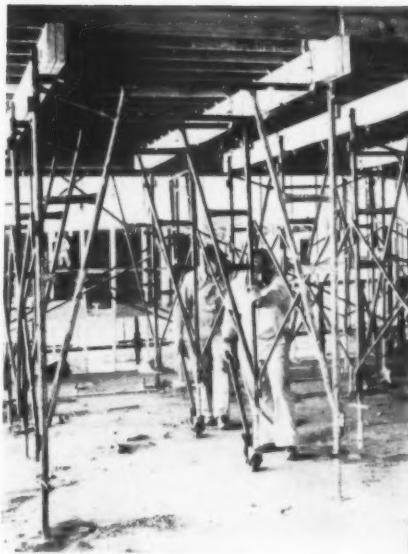


Duraprene oil-resistant hose.

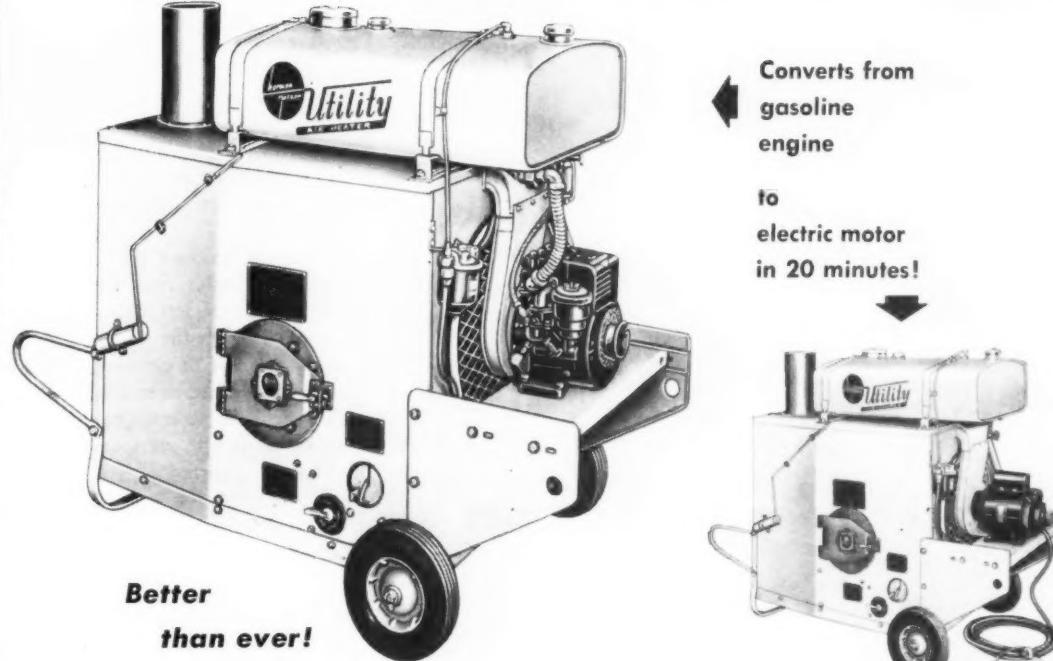
Rubber Mfg. Corp. The Duraprene hose is available in diameters up to and including $\frac{3}{8}$ -inch.

For further information write to the Hamilton Rubber Mfg. Corp., Meade and Prince Sts., Trenton, N. J., or use the Request Card at page 18. Circle No. 131.

EMPLOYING A ROLLING SCAFFOLD-SHORING UNIT of Universal Eze-bilt scaffolding and a special four-wheel trailer, the Warner Construction Co., San Angelo, Texas, was able to save a reported 60 per cent on forming costs in the construction of concrete slab roofs for several Midland, Texas, school buildings. The one and only set of forms was mounted on 20 x 28-foot units of Eze-bilt scaffolding jacked into place. After the concrete had set, the screw jacks were removed from the center section of scaffolding and replaced by casters. Then the rest of the jacks were removed and, with the entire form supported by the caster-mounted section, the unit was rolled to the next pouring site. When the forms were moved from building to building, the center section of scaffolding was removed completely and replaced by a four-wheel trailer built up with wooden framing to form height. Then the jacks were removed from the rest of the scaffolding and the trailer, supporting the entire form, was towed to the next building. For further information on Eze-bilt scaffolding circle No. 114 on the Request Card at page 18, or write to the Universal Mfg. Corp., 133 North St., Zelienople, Pa.



Herman Nelson...leads them all in versatility and value!



Converts from
gasoline
engine
to
electric motor
in 20 minutes!

Herman Nelson "UTILITY" Portable Air Heater

Already tops in versatility and value, the "Utility" now offers you new, improved features! "Balanced air" combustion eliminates all smoke and soot. One-piece, 2-compartment fuel tank provides safe, easy filling. The "Utility" offers you more because you can interchange the power plants to suit your job...motor drive where you have electric current, or gasoline engine for remote job sites. The "Utility" gives the most heat for the least fuel of

any heater. It operates overnight without re-fueling. Also operates with either gasoline or fuel oils, without need of adjustments. May be used with or without ducts, and with or without venting, depending on job or location. Engineered for utmost safety, with automatic overheat cut-off, and safety trip valve that shuts fuel off when the prime mover stops. Manual heat control, self-cleaning burner. 75,000 to 425,000 BTU capacity.



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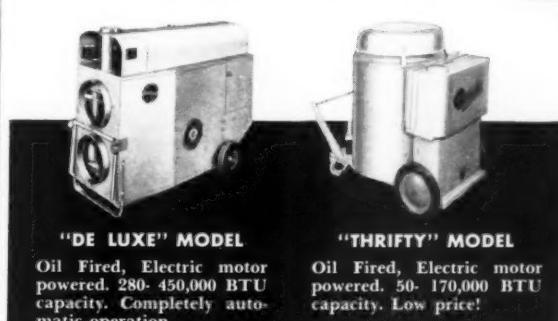
Rush me complete literature on portable heaters. Also send me your monthly Weather Forecast Chart, at no cost or obligation to me.

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"DE LUXE" MODEL

Oil Fired, Electric motor powered. 280-450,000 BTU capacity. Completely automatic operation.

"THRIFTY" MODEL

Oil Fired, Electric motor powered. 50-170,000 BTU capacity. Low price!

Scarifying frost was a daily chore for LeTourneau ripper and Cat D8 combinations. These rigs covered the entire site daily, since it was found that any subsequent freezing did not go as deep as it would in unscarified ground.

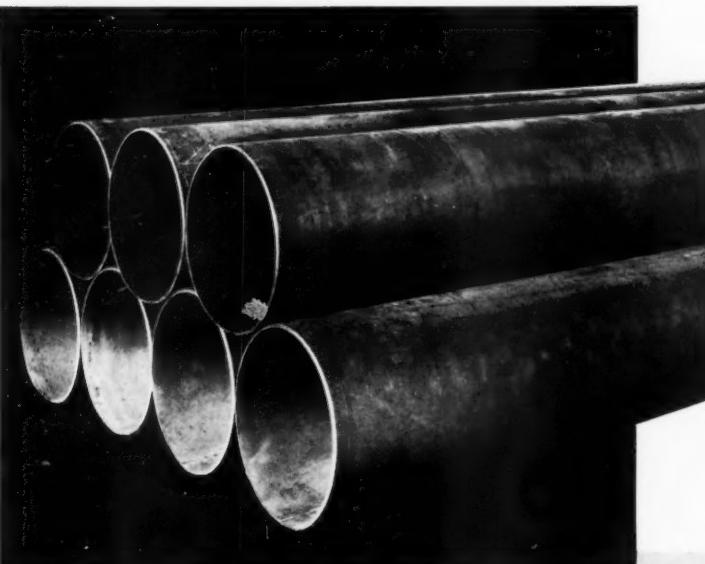
C&E Staff Photos



POSEY LARGE O.D. PIPE

Posey specializes in the fabrication of large O.D. pipe for high pressure, high temperature service in water lines, sewage outfall lines and similar applications . . . with facilities for producing pipe and piling from 20" diameter and larger . . . economically and on time. Write for specifications and prices without obligation. Your request will receive immediate attention.

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DREDGE PIPE AND ACCESORIES

POSEY IRON WORKS, INC.

Steel Plate Division

New York Office: Graybar Building

Lancaster, Penna.

Established 1910

For more facts, use Reader-Reply Card opposite page 18 and circle No. 319

Scraper fleet fights winter to finish grading school site

Cold, snow, frost, and short hours of daylight all did their share in complicating the already tough job of doing a 240,000-cubic-yard site-grading project in 20 working days. This project involved excavating heavy wet clay and silt soil on a 40-acre school site at the northwest corner of Rochester, Minn., then compacting it back into the fills.

This job would have been difficult enough under summer conditions: the area to be graded had a natural difference of elevation of 55 feet in its 1,500-foot length, and preparing a nearly level building site and parking area on the northern half of this tract, and athletic fields on the southern half, required cuts approaching 20 feet in depth and fills in excess of 12 feet. These deep cuts and fills were at the ends of the site and tapered off toward the center, where grading was very light.

It was November 8, 1955, when Leon Joyce, Rochester, was awarded the contract for the job. This meant that he had to push the work with every available piece of equipment so that it would be finished within the specified time and the building contractor would be able to start work without delay in the spring.

Though the job looked like a natural for shovels and trucks, Joyce, aware of the nature of the material

and the problems it posed, decided to bring in several spreads to do the work.

These spreads, scattered on other work in the vicinity, were on the job two days after the contract had been awarded. By the third day, work was in full swing. Within the week, ten scrapers, three push-tractors, two dozers, two rippers, two motor graders, a self-propelled sheepfoot roller, and miscellaneous supporting equipment were at work.

Scraper fleet

The scraper spread included a new Euclid S-18, two Caterpillar DW21's, two C-Tournapulls, and five Caterpillar D8 tractors pulling Gar Wood scrapers. Three of the latter were 25-yard scrapers; the other two were of 12-yard capacity. Pushing the scrapers on the loading cycle were a Euclid TD-12 tractor and two Caterpillar D8 tractors.

The first operation of the spread was the stripping of topsoil from both cuts and fills in the entire area. This good black soil was stockpiled in two huge piles containing a total of 32,000 cubic yards. The stockpiles were built near the center of the tract, where the natural ground was at the approximate finished grade. This was a relatively easy operation, since the sod covering most of the tract acted



ROLATAPE MEASURING WHEELS

FOR EFFICIENT, TIME-SAVING
ECONOMICAL MEASURING!

Actual working conditions prove that measuring time can be cut to a fraction with a Rolatape Measuring Wheel.

ROLATAPE MODEL #400—Widely used by Telephone Companies, Utilities, Paving Contractors, Land Appraisers, etc. It's four-foot circumference measuring wheel gives accurate measurements even on fairly rough terrain. Constant logging information in plain view . . . Can be operated from car at slow speed. . . . Light weight and sturdy . . . calibrated wheel measures from zero up to nearly nineteen miles. . . . Counter can be reset at any distance.

ROLATAPE MODEL #200—For interior and outside use. Widely used by Real Estate Men, Appraisers, Roofers, Traffic Officers, etc. A built-in totalizer records measured distance in feet and inches. Measures line-to-line and wall-to-wall. . . . Vertical measurements are easy to make . . . simple to operate. Extend handle, guide . . . Rolatape measures and records.

ROLATAPE MODEL #600—For cross-country and acreage measurements, or measuring conduit distances where rough terrain ordinarily creates traction problems. Can be mounted from rear of jeep, tractor, or any slow moving vehicle. Special hitch available. Measures up to nearly nineteen miles. Records as it measures.

FOR ROLATAPE INFORMATION, SEE YOUR DEALER, DISTRIBUTOR
OR WRITE TO

ROLATAPE INC.

FACTORY: 1741 FOURTEENTH STREET, SANTA MONICA, CALIF.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 320

CONTRACTORS AND ENGINEERS

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OCTOBE

Deep cuts and fills, frozen ground, wintry

weather fail to stop equipment from handling

240,000-yard project in 20 working days

(Additional photo on front cover)

as an insulating blanket and prevented frost from penetrating into the topsoil.

But just as the stripping operation was being completed, the temperature began to drop. The soil, without its protective sod covering, was soon penetrated by the frost. Before the frozen material could be loaded, the surface of the ground had to be scarified with rippers.

Rippers scarify frost

At first, the two LeTourneau rippers, pulled by Caterpillar D8 tractors, only had to loosen the surface for the scrapers. But as frost penetration went deeper, the rippers had to work continuously. Gradually, the equipment started fighting to keep the frost from getting beyond the depth where it could not be broken up by the rippers. At times the frost penetration was at least a foot; several times a pusher tractor had to help the ripper on spots that were exceptionally tough.

The rippers were kept busy working over the entire area, not just the immediate area in which scrapers were to work. It was found that sections which had been ripped did not freeze to as great a depth on subsequent days as did the unscarified natural ground.

The frost itself more than compen-

sated for the cost of scarifying the frozen surface of the ground, for in some of the wet silty areas, the haul roads were very difficult to maintain until the ground froze. Once there were a few inches of frost, the roads hardened and carried the heavy equipment without difficulty.

One important advantage of the scraper operation on this job was that it permitted the several types of material to be blended in the fills. Portions of the excavation were high in clay content, others were very unstable silt, and some loads of both materials contained frozen lumps.

By keeping one spread of scrapers in the clay, and one in the silt, the contractor was able to load both at the same time. These materials, hauled to the same fill, were mixed as they were dumped, then spread in thin layers by the scrapers. In the spreading operation, frozen lumps were either broken up or dispersed throughout the non-frozen material so that they did not interfere with compaction. Thus, with no additional manipulation, the material became well blended and stable in the fills.

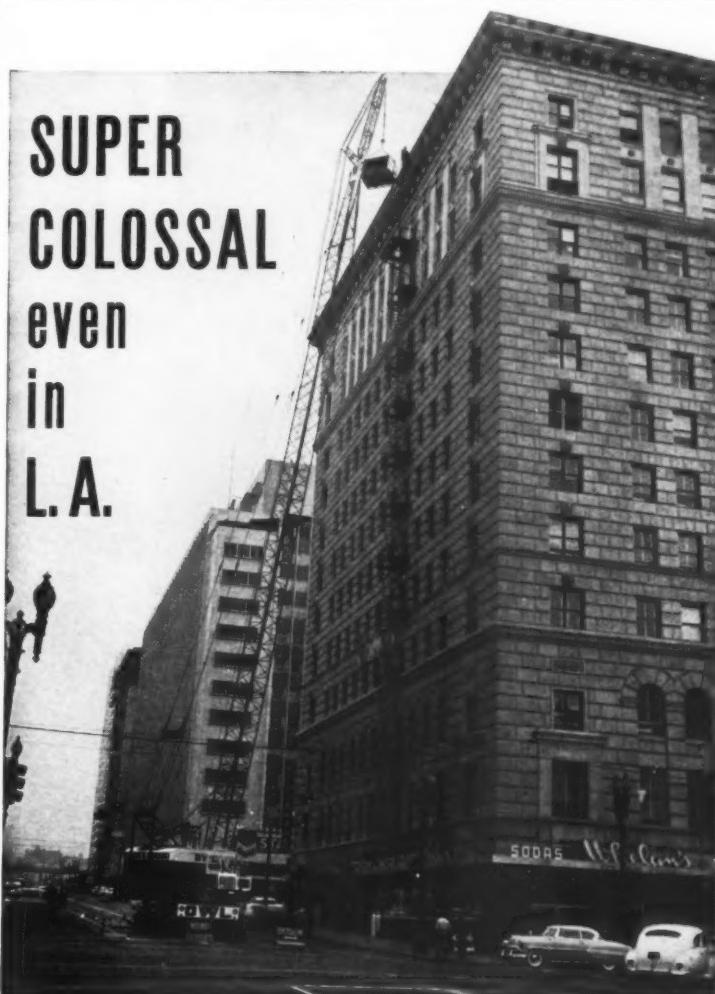
Self-propelled sheepfoot roller

In addition to the compaction obtained by tractors and scrapers as they ran over the thin layers of fill,

(Concluded on next page)



The contractor had his own ideas about some equipment. This v-tc g... Cat DW10 tractor was shop-equipped with a special pair of rear wheels made from sheepfoot rollers. Concrete ballast provides the desired pressure.



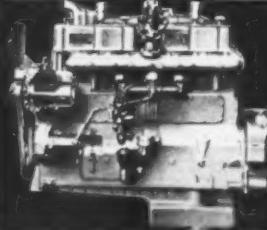
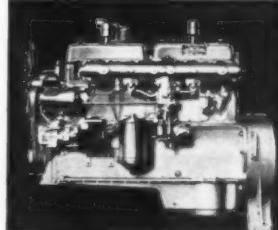
Los Angeles probably saw its highest hoist—10 tons of refrigeration machinery lifted atop the 12-story Roosevelt Bldg.—by a Waukesha-powered, 50-ton American Hoist & Derrick Co. 795-Crane. The self-lifting boom, with its stinger, was 190 ft. high. The Crane is mounted on a Cook Bros. CT-450 Carrier which is also Waukesha-powered. The Owl Truck & Construction Company of Compton, California, own and operated the crane. The job took only one day, instead of the estimated five days needed with a stiff leg.

WAUKESHA ENGINES

Powering Crane (boom)—140-GK
Waukesha Gasoline, six cylinders,
4½-in. x 5½-in., 525 cu.in. displacement.

Send for
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Powering the Carrier—145-GKB
Waukesha Gasoline, six cylinders,
5¼-in. x 6-in., 779 cu. in. displacement.



WAUKESHA MOTOR COMPANY, Waukesha, Wisconsin • New York • Tulsa • Los Angeles

For more facts, use Reader-Reply Card opposite page 18 and circle No. 322

**HOSE by CR
CONTINENTAL**

CONTINENTAL RUBBER WORKS • 1989 LIBERTY ST. • ERIE 6 • PENNSYLVANIA

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OCTOBER, 1956

Frozen, scarified material is loaded by a Cat DW21 scraper and Cat D8 pusher. Scrapers scattered this kind of material in the fills and mixed it with loose material so that reasonable compaction was obtained with a minimum of lumps.

C&E Staff Photo

compaction was secured by a shop-built self-propelled sheepsfoot roller that operated continuously. This unique roller was one of two similar machines built in the contractor's shops from Caterpillar DW10 tractors.

Joyce, one of the pioneers in the use of light rubber-tire tractor-scrapers, had used a combination of Caterpillar DW10 tractors and LaPlant-Chote scrapers before Caterpillar began producing a scraper to match the DW10.

When the old rigs were replaced as haul units, two of the tractors were fitted with special rear wheels fashioned from the drums of sheepsfoot



rollers. A ballast box was added at the rear of the tractor so that it could carry concrete weights to obtain the desired unit pressures under the feet.

These rollers have been very satisfactory. Their ability to operate equally well backward or forward saves turning time and proves particularly valuable on narrow fills. Being self-propelled, they do not tie up a tractor for their operation. And when they have to move from one job to another, they can load themselves on the trailers.

On this job, these sheepsfoot rollers, like the drawn type, were difficult to keep clean because the soil not only compacted between the teeth, but also froze there. In spite of this drawback, the roller did an effective job of breaking up the large frozen lumps and compacting the fills.

The human element

In addition to the mechanical problems on this project, the contractor had to meet special problems involving his crews.

There were only about 9 or 10 hours of daylight in these short winter days, and the men literally worked from dawn to dusk, six days a week. Most of the workmen were protected by heavy coats with parkas attached, heavy lined gloves or mittens, and warm footwear since they operated open equipment all day in below-freezing temperatures. Custom-made "blankets" were also fitted to all of the tractors and some other machines to hold in the engine heat and direct it back toward the operators. These precautions made it possible for workmen to stay on the job all but two days when blizzard conditions made it impractical for them to try to work.

Supervising this job for Leon Joyce were superintendent J. H. Brady and assistant superintendent Clarence Olson. In addition to the operators of the twenty or so pieces of equipment on the job, the field crew included two mechanics, two greasers, two laborers, and three foremen. THE END



Switch to extra-tough AMSCO® MANGANESE STEEL TRACTOR SHOES

When the going is extra tough, as in rocky areas or abrasive mineral soils . . . tractor shoe replacement can become a major cost item. Both repair time and down time eat up profits.

Switch to "the toughest steel known" . . . Amsco Manganese Steel . . . for tracks and grouser bars. Check their much longer service life against the moderate extra cost. Add to this the greater

efficiency and pulling power of your tractor, over a longer period of time. The answer: *important operating economies*.

Amsco Manganese Steel gives excellent resistance to abrasion accompanied by impact . . . actually *work-hardens* in use. Write for full information on long-wearing Amsco Manganese Steel Tractor Shoes—the economical answer to high track-replacement costs.



COUNTER-SUNK BOLT HOLES

Amsco Track Shoes have holes countersunk for less wear on bolts. Saves cost of replacing bolts when changing shoes.



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OTHER PLANTS IN: DENVER, LOS ANGELES, NEW CASTLE, DELAWARE, OAKLAND, ST. LOUIS; JOLIETTE, QUEBEC

For more facts, use Reader-Reply Card opposite page 18 and circle No. 323

Propulsion engines

The Harbormaster outboard propulsion and steering engines for dredges and crane barges are featured in a catalog from Murray & Tregurtha, Inc. Job photos show the gasoline or diesel models mounted on the stern deck of a craft. The specification tables point out that engines are available in horsepower ranging from 40 to 400.

To obtain the catalog write to Murray & Tregurtha, Inc., 2 Hancock St., Quincy 71, Mass., or use the Request Card at page 18. Circle No. 69.



The Oshkosh 45-55JT is designed for gravel hauling and highway maintenance operations.

All-wheel-drive trucks will haul 18,000 pounds

A heavy-duty, all-wheel-drive truck series designed for gravel hauling and highway maintenance is announced by Oshkosh Motor Truck, Inc. The Model 45-55JT truck is an adaptation of the Oshkosh 50-50 ready-mixed concrete carrier with the engine cantilevered over the front axle.

The truck is powered by either a Continental 427-cubic-inch gasoline engine or a Cummins JT-600 diesel. It has an 8½-cubic-yard gravel dump body which will carry a payload of 18,000 pounds on the front axle to conform with maximum load limit in most states. Provision is made for mounting an underbody blade for road-grading work.

A short wheelbase of 144 inches and Vickers power steering contribute to maneuverability in spotting loads and handling ease in traffic, the manufacturer reports. A large sander body can be mounted in conjunction with the underbody blade for winter road maintenance and ice control.

For further information write to Oshkosh Motor Truck, Inc. 2300 Oregon St., Oshkosh, Wis., or use the Request Card at page 18. Circle No. 145.

Line of torque converters

National torque converters are offered in two types (open or closed circulation system), six sizes, and 17 hydraulic circuits which cover the 100 to 1,000 horsepower range, according to a bulletin from the firm. Application, design, and optional equipment are fully described. A torque-converter capacity chart is included.

To obtain Bulletin No. 468 write to The National Supply Co., 2 Gateway Center, Pittsburgh 30, Pa., or use the Request Card at page 18. Circle No. 102.

Concrete forming

The Uni-Form panel system of concrete forming is told in step-by-step process in a catalog from the Universal Form Clamp Co. Complete information is given on panels, ties, clamps, fillers, closures, and pilasters. The erection of circular and Y-wall forms is detailed. Form erection and stripping tools are pictured and described.

To obtain Catalog 125 write to the Universal Form Clamp Co., 1238 N. Kostner Ave., Chicago, Ill., or use the Request Card at page 18. Circle No. 188.

For more facts, circle No. 324→

Low headroom featured in reduction crusher

Low headroom, choke feeding, and crushing without rubbing are among the features of a new gyratory fine-reduction crusher announced by the Straub Mfg. Co. The Kue-Ken gyratory is available in fine, medium, and coarse bowl liners.

Receiving openings range from 1½ to 3½ inches in diameter. Discharge settings range from ¼ to 1½ inches. The unit has a capacity of from 10 to 75 tons per hour.

For further information write to



The Kue-Ken crusher has a capacity of 10 to 75 tons per hour.

the Straub Mfg. Co., 8383 Baldwin St., Oakland 21, Calif., or use the Request Card at page 18. Circle No. 130.

LIMA CRANES

... with mountings for every need

Cranes—Crawler mounted, Truck mounted—Wagon mounted. Baldwin-Lima-Hamilton builds them all and in sizes that will best meet your requirements. When mounted on rubber they are available in capacities up to 50 tons. They will go anywhere you care to drive a truck and at speeds up to 25 m.p.h. For work where mobility is not an important factor, LIMA crawler mounted cranes can be furnished in capacities up to 110 tons.

To increase their range of usefulness a variety of attachments are available—shovel, dragline, clamshell, pullshovel and pile driver. Each attachment is interchangeable. For fast, more efficient crane service buy the crane that is first in quality—first in safety and reliability—BUY LIMA.

CRAWLER TYPE

- available in capacity up to 110 tons
- travel speed up to 1 m.p.h.
- all major operations air controlled except types 34 and 44
- independent boom hoist
- long-wide crawlers for greater stability

TRUCK TYPE

- mounted on LIMA 10 wheel truck carrier
- powered by two engines (one in carrier, one in rotating frame)
- travel speed, 25 m.p.h.
- types 24, 34, 44, 54 and 703 available with truck mounting

WAGON TYPE

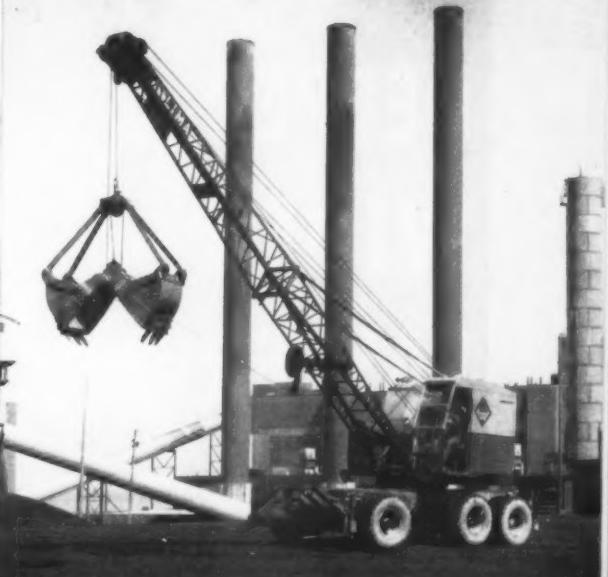
- types 24, 34, 44, 54 and 604 available with wagon mounting
- one engine powers all operations including travel
- one operator controls all operations from cab
- rotating assemblies have same basic features as corresponding crawler type machines.

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LIMA SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

BALDWIN-LIMA-HAMILTON
Construction Equipment Division — LIMA WORKS

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Safe road is deciding factor in adoption of de-icing method

Rock salt proves most effective in keeping city streets clear of ice and hard-packed snow, engineers' study shows

NOW! Cure Concrete a Full Week Faster with FULCO Concrete Curing Mats



Can be Re-Used Up to 75 times!

No more waiting 10 long days to set concrete with wet-burlap-wet-earth method. No more tying up of costly materials. Fulco does the job in 3 days flat! Does it better, too! Fulco Mats stay wetter longer and with less water. They increase the compressive strength of concrete, insulate against sudden temperature changes to produce a more uniform job. And because they can be re-used so often, they cut cost-per-job to the bone.

See your equipment dealer or contact your nearest Fulton Branch today.

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Fultex TRIPLE-STRENGTH TARPS



Fulton
BAG & COTTON MILLS

For more facts, use Reader-Reply Card opposite page 18 and circle No. 325

**ARPS
TRENCH HOG**
**digs
DEEPER
WIDER
FASTER**



Deeper Trenches — Depths up to 7' accurately controlled by hydraulic power.

Wider Trenches — 6" through 20" widths; cutters changed easily for various widths.

Faster Trenching — Up to 800' per hour depending upon depth and soil conditions.

PLUS —

Heavier weight than any other tractor-mounted trencher assures greater stability, longer life and increased ability to handle tough soils. Independent speed control for each drive wheel provides extremely accurate straight-away and curved trenching. Special chisel-type cutters available for frozen or rocky soils. Sturdy, all-steel frame resists twisting . . . absorbs shock stresses. One-man operation and economy with wheel tractor mobility. Now available for most popular tractors, including light industrial models.

Ask for free literature and specifications. Write to Arps Corporation, New Holstein, Wis., Dept. CE.

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CORPORATION**
NEW HOLSTEIN,
WIS.

TRENCHERS • HALF-TRACKS
BULLDOZERS • UTILITY BLADES

For more facts, use Reader-Reply Card opposite page 18 and circle No. 326

Perhaps the most important phase of work coming under snow removal is the de-icing of roads. Snow may stop or slow traffic until roads have been cleared, but drivers can use dangerous icy roads at any time and, for this reason, a fast, efficient de-icing program bulks large in any wintertime road-maintenance work.

One of the most effective de-icing programs has been carried on in past years in Detroit, which relies to a great extent on the use of rock salt to keep streets clear of ice. As an average, snow and ice cover this city's streets 35 times during the winter, slowing traffic and making travel dangerous. Whenever this occurs, snow removal and de-icing crews go to work immediately.

The program has worked so well that the Civic Affairs Committee of the Engineering Society of Detroit, after a 2½-year study of de-icing work, commended the city for what was termed an "excellent, effective" de-icing program.

Other methods

The society's report concluded that de-icing work with rock salt was "by far the best procedure" on the city's streets, doing a more effective job than either cinders or sand. One of the drawbacks of cinders is that they have to be available in the immediate vicinity if their use is to be economical. Then too, since they are not uniform in size, they have to be distributed by shovelers rather than mechanical spreaders. Since cinders are light in weight, the report also pointed out, they are easily blown from the street by strong winter winds, and they sometimes find their way into catch basins. There is a danger, also, that if cinders are used continuously during a series of snowfalls, that they will tend to build up a thick ice mat as layers of cinders are, in turn, covered over by a new layer of ice. Though sand can be easily distributed by mechanical spreaders, most of the objections to the use of cinders also applies to sand.

Better results are achieved in de-icing when sodium chloride, more commonly called rock salt, calcium chloride in pellet form, or a combination of the two are used. Both generate heat when they go into solution, melting the ice. As the chemical dissolves, its weight allows it to penetrate the ice layer until it reaches the pavement and breaks the bond between the ice and the pavement.

Rock salt is considerably cheaper than calcium chloride in most areas, and for this reason its use is more widespread. But calcium chloride appears to remain more effective than sodium chloride at lower temperatures, so mixtures of rock salt and calcium chloride pellets are sometimes used to melt ice when temperatures drop so low that rock salt alone would be ineffective.

Most of the opposition to the use

CONTRACTORS AND ENGINEERS

of rock salt for de-icing stems from its effect on pavements, automobiles, and utility structures. Rock salt is hardly detrimental to asphalt surfacing or roadways that have been constructed of air-entrained concrete. In one study made by the Highway Research Board, the results of which were published in Bulletin 70 "Record of Experimental Air-entrained Concrete 10-14 Years After Construction", it was found that air-entrained concrete pavement showed no scaling or disintegration after a period of from 12 to 14 years. Adjacent concrete slabs, built without air-entrained concrete, scaled up to 100 percent of their surface.

The use of rock salt for de-icing also adds to the natural causes of corrosion of automobiles, particularly of the decorative chromium and painted surfaces. One of the most ambitious studies made on the effect of salt on automobiles—a continuing study being made by General Motors Corp. through its Research Laboratories Division—points out that the enamels and lacquers used on automobiles today remain relatively unaffected by the salt used to melt ice and snow. Corrosion starts only when the finish of the car has been broken and, once started, will spread under the paint in all directions from the break. However, car builders have been aware of this problem for some time and have been taking steps to eliminate the chance for corrosion to start. Almost all motor car manufacturers now use a phosphate coating on auto bodies before painting is done, and this has done a great deal to minimize the spread of rust under the paint film when a break occurs.

Of concern when de-icing is done on city streets—though it is less of a problem outside heavily populated areas—is the corrosion caused by rock salt to telephone and electric utility lines. Salt sometimes seeps into manholes, causing parts of steam lines to corrode, but any difficulties caused by street salt "are not considered too severe" in Detroit, according to a representative of the Detroit Edison Co. Telephone structures above ground are of such a nature that few if any corrosive effects were noticed during the time covered by the engineers' study. In general, salt affects telephone and electric utilities very little, and the slight damage that does occur can be handled readily by normal maintenance procedures.

In balancing the value of rock salt in de-icing work in Detroit against other methods of keeping the street clear, the Engineering Society felt that the rock salt procedure gave best results for the money expended. Detroit is getting just what it wants, a de-icing program geared to the staggering problem of keeping an urban community operating in spite of bad winter weather. THE END

From "The Use of Salt for De-icing Streets", a report by the Civic Affairs Committee of The Engineering Society of Detroit.

OCTOBER, 1956

THE ROCHESTER, MINN., PUBLIC WORKS DEPARTMENT PROVED ITSELF to be more than a match for winter last year in keeping that city's traffic arteries open during the snow season. One of the rigs which helped win the battle against the elements was this Athey 7-11 force-feed loader, shown in operation in downtown Rochester. The 7-11 handled both windrowed snow as well as shallow blankets of the white stuff. Its side delivery permitted a smooth, continuous operation with a minimum of idleness. The 7-11 is able to clean close to curbs and down to the bare pavement. It is rated at 20 cubic yards of snow per minute and can move 10 cubic yards per minute of such other free-flowing materials as cinders, sand, stone and dirt. The rig can also deliver straight to the rear. For more information on the force-feed loader write to the Athey Products Corp., 5631 W. 65th St., Chicago 38, Ill., or use the Request Card at page 18. Circle No. 151.



GOING UP to 14 stories! 9000 cubic yards of concrete plus hundreds of tons of construction materials were moved by an American 3-drum hoist during construction of this modern building.

GOING UP, RIGHT ON SCHEDULE

The hoist on a big job like this gets a real work-out—buckets and elevators going up and down hundreds of times a day! Just one hoist breakdown can throw the whole job off schedule! A dependable hoist keeps jobs rolling. That's why tough American Hoists are demanded on all jobs where there's no time for trouble! Anti-friction, self-aligning bearings cut wear to the bone. Machined gears give smooth power flow and job-proved clutches and brakes mean safe load control! All these American Hoist features, plus many more, add up to give you years of trouble-free, low cost hoist operation on every job, regardless of size.

If you want the contractor's story, stop at the next job where you see an elevator at work—it's almost certain to be powered by an American! Ask the owner, and operator too, what they think of their American—then see your American Distributor for details about a line that starts with capacities of 3,000 pounds single line pull!

AMERICAN HOIST
and Derrick Company
St. Paul 1, Minnesota

For more facts, use Reader-Reply Card opposite page 18 and circle No. 327

Weather engineers

help individual contractors to schedule operations; three types of forecasts make job planning easier

Weather forecasting is so familiar to the public that it has come to rival only the mother-in-law as a popular subject for American humor. But meteorologists are serious technicians, with a know-how on a par with most of those working in the sciences, and one of the newest developments in this field makes that know-how of particular value to construction men.

Specialization has given rise to a new kind of meteorologist—the weather engineer—whose job it is to understand the effect of weather on industry and to provide industry with information that has a dollars-and-cents value in an accurate and easily understood way. Industries, concerned with the effect of weather on their operations and profits, are finding the factual and timely information supplied by the weather engineer of importance in their operations. Weather information gathered specially for contractors helps them evaluate job risks and decide whether or not a job should be shut down.

In developing this service for contractors, the private consulting meteorologist firm first makes a thorough study of the weather problems of special concern to the construction industry. Personal discussion and consultation provided a broad base from which to work. But all contracting firms do not have the same problems, and two contractors might follow different procedures on similar jobs, even though the weather might be the same in both cases.

The second job in providing weather information for a particular contractor is to pinpoint that contractor's individual problems. Only the contractors being served can provide information on the potential savings that can be made by a weather service. Only contractors being served can state the kind of weather information most useful to themselves.

How it works

One of the firms supplied with the service put it to good use during a large construction job it started during the winter months. Most of the work had to be done outdoors and involved a tremendous amount of concrete placement. Although it was impossible to prepare daily forecasts a month in advance, it was possible for the private meteorologist firm to advise the contractor of the probable number of hard freezes, and the number of days when there would be rain during each week of the winter.

In this way, the contractor knew that there was a strong possibility that there would be more than three days of precipitation during the third week of October, while the odds were that rain would fall less than three

days during the first week in November. This was not a specific forecast, but it gave the contractor a good basis for evaluating his risk when he planned work for those weeks. This phase of the service was considered the "long-range planning" phase.

"Short-range planning" and "operational" forecasts provided the contractor with supplementary weather information. The former were 5 to 7-day forecasts, indicating the general temperatures and precipitation to be expected in the next 5 to 7

days. These were provided daily. The "operational" forecast—a two-day forecast also issued daily—supplied detailed information on temperatures, precipitation and winds. This forecast was subject to alteration at any time of the day or night, as soon



On this Florida Turnpike contract of Blythe Bros., two TS-18 "Eucs" loaded, hauled and dumped in sandy conditions that "hung up" other equipment. The tremendous power and traction of this Euclid scraper, and its easy operation, made the "Twin" a logical choice for this tough job.



Western Contracting Corp. owns 15 of these TS-18 Euclid Scrapers . . . they used 12 of them on a 7 million yard Indiana Turnpike contract and now have 10 of their "Twins" at work on Oahe Dam in South Dakota. Western's scrapers are equipped with top extensions that add 6½ yds. to the bowl capacity . . . have a total of 518 h.p.—a 300 h.p. engine in the tractor and 218 h.p. for the scraper wheels.



The TS-18 is powered by two 218 h.p. engines—one in the tractor and another behind the scraper bowl. For work where even more power can be used, a 300 h.p. engine for the tractor is available. Both engines drive through separate Torqmatic Drives. Standard tires are 27.00 x 33 with 33.50 x 33 available as optional equipment.



Harris Construction Co. recently set a new record for earth moving on Montana highway work with six TS-18 "Eucs" . . . moved 90,000 yds. in a single week, working 10 hours a day. The scrapers self-loaded and hauled an average of 2,000 ft. This contractor is also using his "Twins" for grading and construction of runways at nearby Glasgow Air Base.

**EUCLID DIVISION
GENERAL MOTORS CORPORATION
Cleveland 17, Ohio**

by ARMAND R. IACCHEO

Weather Corp. of America,
New York, N.Y. and St. Louis, Mo.

as any change in the weather was foreseen.

To serve the contractor best, it was necessary to inform him of the time of the beginning and end of precipitation, the intensity of precipitation, and whether it would come in the

form of ice, rain, or snow. Important too was the frequency of rainfalls. Information on the type and intensity of precipitation was important on this job, for if a few drops of rain or a single shower were expected, he could schedule his crews for a

full day's work. If he knew the period of the day in which rain or snow would fall, he could prepare his schedules accordingly.

During these winter months, he also had to be supplied with detailed temperature forecasts. It was not

enough for him to know that the minimum temperature would drop below freezing on a given day. He had to be informed of how many hours temperatures would remain below freezing, or below the freezing point of the concrete he was using. If ground temperatures were expected to be a few degrees below the freezing point for one or two hours, the contractor frequently went ahead with placing operations. If, however, the temperatures were to be below freezing for five or six hours, no concrete work was scheduled.

Cooperation pays off

This type of weather service is most efficient when the contractor and his weather engineer work in close cooperation. Properly advised as to a contractor's problems, the weather engineer firm can select, check, and pass on to the contractor weather information of particular importance to his project. The private consulting meteorologist firm is on duty 24 hours a day, 365 days a year, and, in addition to providing regular scheduled forecasts, is obliged to get in touch with the contractor as soon as weather changes are in the offing. Since each contractor subscribing to the service is dealt with on an individual basis, the contractor can consider that a coordinated staff of meteorologists is well aware of his particular problem and is helping to solve them.

THE END

Wider blades simplify control-joint sawing

■ Two reinforced, break-resistant, abrasive blades for sawing control joints in green concrete where corrugated cardboard strips are to be used to control random cracking in highway and airport construction are announced by the Clipper Mfg. Co. The Green-Con specification C-5419 will produce a saw cut approximately $\frac{3}{8}$ -inch wide, and the C-5424 will make a cut about $\frac{7}{16}$ -inch wide.

The wider specifications for use on control-joint applications were designed to overcome the problem of inserting the cardboard strips in a true, straight line. The wider Green-Con blades are able to saw out the full width and correct for any curvature which may be present in the cardboard joint. Previously, it had been necessary to use two blades clamped together to saw out these corrugated cardboard strips.

The new blades may be used wet or dry; for best footings, it is recommended that they be used wet.

For further information write to the Clipper Mfg. Co., 2800 Warwick, Suite 635, Kansas City, Mo., or use the Request Card at page 18. Circle No. 2.

→For more facts, circle No. 362

TS-18 "Euc" cuts earth moving costs!

VERSATILITY
for a wide range
of work!

anywhere. The low, wide bowl design and reversible four-section cutting blade make the TS-18 easy to load ...heaped loads up to 24 yds. are picked up fast.

Like all other Euclid Scrapers, the TS-18 is built to stay on the job with less down-time for servicing and repair. All major components are readily accessible ... a feature that really pays off in more workability and lower maintenance cost. Your Euclid dealer has facts and figures showing why owners everywhere say that **Euclids are your best investment.**

Euclid Equipment

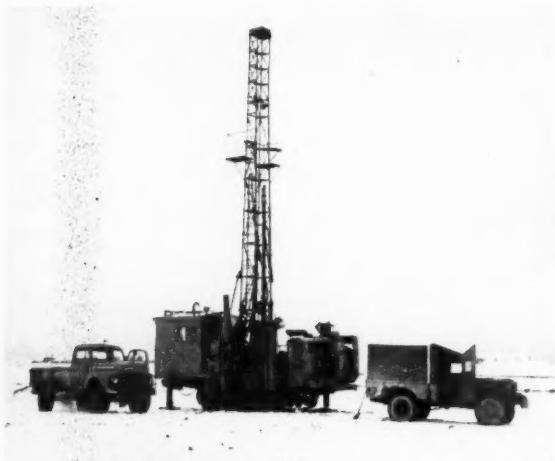
FOR MOVING EARTH, ROCK, COAL AND ORE



North of the Arctic Circle

Winter comes early to Greenland, where the Eastern Ocean District of the U. S. Army Corps of Engineers is building the Thule Air Force Base. These photos were taken last month, just before cold weather shut down flexible-type paving operations on a taxiway. Work will be resumed next May. North Atlantic Constructors and Greenland Contractors are doing the work. Metcalf & Eddy and Alfred Hopkins & Associates are the architect-engineers.

Dan Morris Photos



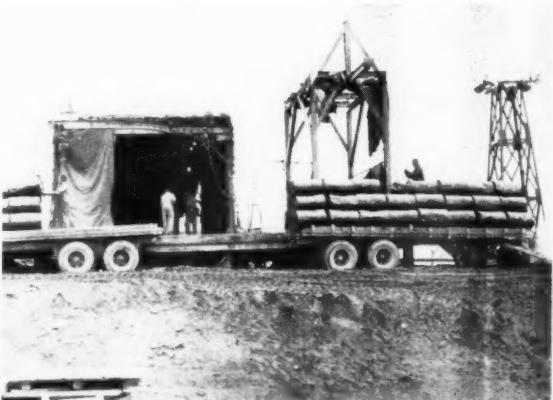
◀ Before pavement is laid, a Joy drill rig, equipped with a 6½-inch bit, determines the depth at which permafrost is found. This information is essential in designing the base course.

A Euclid end-dumps select crusher-run material for the base, while a Cat D8 with dozer spreads the 6 to 8-inch lift. The Cat, winterized with tarpaulins, has a cab to protect the operator. ▶



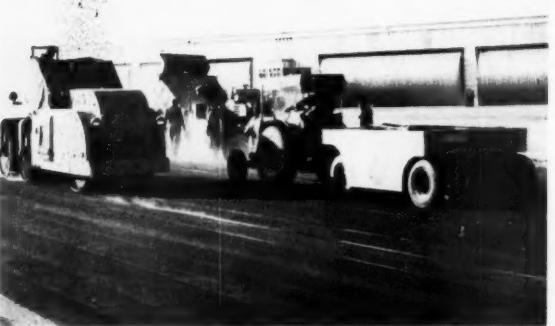
◀ At this point, the taxiway will butt against the concrete runway. To insure a smooth joint and tight bond, a Clipper concrete saw makes a clean cut along the edge of the existing slab.

Asphalt (penetration 120) for the mix is shipped in drums from U. S. ports to Greenland. When the metal drums have been slit, the slugs of solid asphalt are heated in this shed until they become liquid. ▶



◀ This Cedarapids asphalt plant turns out hot-mix at the rate of 140 tons per hour. A Lima crane with clamshell charges the bins with 1-inch crushed stone. Asphalt content is 6.25 per cent.

Tarpaulins protecting their contents from the cold, trucks dump to the hopper of a Barber-Greene finisher that lays the 2-inch surfacing. A Galion 5 to 8-ton tandem roller makes the initial pass for compaction. ▶



◀ Further rolling by a Buffalo-Springfield 3-axle tandem, weighing 18 tons when loaded, and by a Tampa rubber-tire roller, pulled by a winterized farm-type tractor, compacts the mix to the required density.

At temperatures below 33 degrees F., the freshly laid pavement was covered with canvas and heated by American Air Filter units, each providing 400,000 Btu per hour, to insure uniform setting of the asphalt. ▶



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Swiftly erected shelter strong against wind, cold

An Arctic shelter, capable of withstanding winds up to 100 mph and snow loads up to 75 pounds per square foot, has been developed by the U. S. Army Corps of Engineers and adopted for use as communications shelters, first-aid stations, and barracks, by the army.

The shelter is made up of 4 x 8-foot wall panels, each weighing 96 pounds. These 3-inch-thick stress-covered panels have fir plywood surfaces glued and nailed to the wood edge banding and interior framing. Three types of panels used in a shelter—plain, window, and door—make it possible for any number of doors and windows to be incorporated into a structure. Cavities between the panels are lined on the inner face by aluminum foil on kraft paper. The foil extends up the sides of the framing, forming a cup that is filled with Fiberglas insulation. Tongue-and-groove joints, used throughout the panel envelope, make a watertight joint for the panels, and a single fastener—a wedge clip—connects all the panels of the entire structure.

The structure's roof consists of skin-stressed fir plywood beams, supported on the bearing walls, which weigh 115 pounds each. Special roof panels are provided for the corners of the building.

Panels 4 x 10 feet and weighing 129 pounds make up the floor. Framing members, running longitudinally inside the panels, consist of $\frac{3}{4} \times 2\frac{1}{2}$ -inch members at 12-inch centers. In an assembled building, the floor is covered by a tempered Masonite wearing surface.

The triple-glazed, hermetically sealed plastic windows used in the structure can be removed and replaced by screening during warmer weather. Ventilation is provided by

slots cut in the framing under each window, and can be controlled by rotating the slot cover.

The structure, developed by the Corps of Engineers Research and Development Laboratories, Fort Belvoir, Va., was approved for use after what were termed "highly successful" tests at Big Delta, Alaska, and Fort Churchill, Canada. In a test at the latter site, a 20 x 48-foot structure, which disassembled, can be dropped from the air, was erected in 65 man-hours by unskilled troops working in temperatures 35 degrees below zero. Under ideal conditions, the shelter can be put up in 90 minutes by seven men.

Air-blast sweeper cleans roadways for resurfacing

■ Recommended for use in asphalt repaving and highway maintenance is the Lo-Blo air broom manufactured by the Atwater Strong Co. The broom is said to quickly clean small surface to be repaved or repaired, assuring a better bond. The broom is also recommended for cleaning up large areas and for cooling operations.

The Lo-Blo consists of a 6-blade rotor driven by a 3.6-hp gasoline motor. The rotor generates a low blast of air across ground level at a velocity of about 115 mph. The air is discharged to the left of the broom or, by an attachment, straight ahead.

A flexible hose connection is available for reaching inaccessible places.

The unit rides on a pair of rubber tires and is pushed like a lawn mower.

For further information write to the Atwater-Strong Co., Atwater, Ohio, or use the Request Card at page 18. Circle No. 122.

Winter tarpaulins

■ A folder on tarpaulin care is now available from the Fulton Bag & Cotton Mills. The six basic rules of tarp care and recommendations on the type of tarps for various uses are explained. Information is included on the way to fold and store tarps.

To obtain the folder write to the Fulton Bag & Cotton Mills, P. O. Box 198, New Orleans 3, La., or use the Request Card at page 18. Circle No. 163.

NOW! the steam cleaner you have been waiting for... the ALL NEW



Your Jenny Distributor offers it on easy terms, with trade-in allowance for your old steam cleaner.

You'll be glad you waited for the ALL NEW "Twelve Fifty" Series Hyppressure Jenny to modernize your steam cleaning operation, because it has many features that guarantee faster and more effective cleaning at lower cost. Here are but a few of "Twelve Fifty's" advantages:



- Quiet, slow-speed, short-stroke pump; less wear; longer life; disc check valves—no adjustments; delivers a full 120 gallons per hour at any pressure.
- Instant starting—instant steaming. Full cleaning power in less than a minute!

• Sturdy compact design. Never before has Hyppressure Jenny packed so much cleaning power into such small space.

• Hinged machinery cover affords easy and complete access to all working parts.

• Remote control—automatically shuts off pump and burner when operator closes valve on cleaning gun—saves time, fuel, compound, water and electricity.

• Cleaning power booster—stirs and preheats solution.

• Hose rack on cover, and rubber-tired wheels make it easy and convenient to take a new "Twelve Fifty" to the cleaning job.

Send full particulars on the ALL NEW "Twelve Fifty" Series Hyppressure JENNY.

I am interested in: Jobber Time Payment Plan

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For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 329

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For more facts, circle No. 328

OCTOBER, 1956

HOMESTEAD
VALVE MANUFACTURING COMPANY
"Serving Since 1892"
P.O. BOX 30 CORAOPOLIS, PA.

FACED WITH THE JOB of pouring and finishing a 100,000-square-foot warehouse concrete deck in below-freezing temperatures last winter, one contractor solved the weather problem with a few tarpaulins and a trio of Master B-400 portable heaters. He hung the tarps around the area to be poured each day and rolled in the heaters to raise the temperature high enough to prevent the concrete from freezing. Here, a workman finishes a portion of the slab with a Master 48-inch Turn-A-Trowel. In the background is one of the Master heaters. For more details on the heaters circle No. 150 on the Request Card at page 18, or write to the **Master Vibrator Co.**, 1752 Stanley Ave., Dayton 1, Ohio.



Electronic device marks safe routes in Arctic

A new electronic device for marking safe trails in the Arctic has been developed by the U. S. Army Corps of Engineers at Fort Belvoir, Va. Research and Development Laboratories. Two parallel wires and a vehicular-mounted radio-type receiver compose the system. An alternating current is fed into the wires, which are buried beneath the snow on either side of the trail to mark the route.

A receiver mounted on a tracked vehicle, the Weasel, detects the current in the wires, and indicators in the vehicle give the driver his position within the trail. Warning devices advise the driver when the vehicle crosses a trail wire.

The system has been tested on 100 miles of the Greenland ice cap, where poor visibility, snow storms, and summer "white outs" make free movement over the ice cap virtually impossible. Work is continuing at the Fort Belvoir Laboratories and at General Mills, Inc., Minneapolis, Minn., to simplify the system, and work on a one-wire system is under study.

Highway equipment

■ A folder from International Harvester describes the firm's line of construction machinery for highway building. The folder, divided into four sections representing the four sections of the country, pictures and details the part I-H's equipment has played on roadbuilding projects in each section. Brief specifications are given on the company's entire line of equipment.

To obtain Form No. CR-513-F write to International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card at page 18 Circle No. 60.

**digs at any angle
...from any position!**

**HIGHWAY HEAVY-DUTY
"Swing-Base"
EARTH-BORING MACHINE**

Exclusive!
Highway Telescoping
Derrick

The telescoping derrick (3500-lb. capacity) can be extended 28 ft. 6" — derrick retracts for convenience of operation. Available as optional equipment on the Model "HC" and "HCMS" Swing-Base machines.

Faster, easier positioning . . . efficient trouble-free digging at any angle —

Highway's "Swing-Base" Earth-Boring Machine allows the operator to rotate the auger 180° — extend it up to 22' — and dig at any point within the arc and within the forward and aft traverse. Both movements are hydraulic, allowing fingertip control.

This heavy-duty unit can be mounted on either a single rear axle truck or a tandem. Outstanding features include hydraulic stabilizing jacks (retractable for traveling position), integral winch, telescoping derrick, and headache rack. The live boom in traveling position requires only 123" clearance. The Earth Borer will dig 9" to 36" holes in any soil, faster and easier than ever before. Leveling mechanisms allow for digging at an angle, and the versatile swing-base platform allows exact positioning regardless of location or angle of the truck.

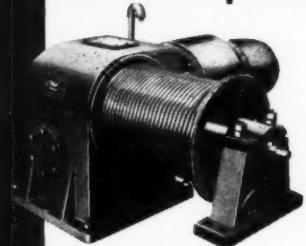
UTILITY DIVISION HIGHWAY TRAILER COMPANY

Headquarters: EDGERTON, WISCONSIN

Manufacturers of Public Utility Bodies • Earth-Boring Machines • Pole and Cable Reel Trailers • Winches • Power Take-Offs • Service Accessories • Commercial Trailers • Trailered Tanks and Dry Bulk Haulers
SALES AND SERVICE IN PRINCIPAL CITIES

For more facts, use Reader-Reply Card opposite page 18 and circle No. 330

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needs from
standard parts**



Meet your hoisting needs precisely at lowest possible cost. Call on our long experience in modifying and re-combining standard parts to meet specialized hoisting requirements.

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For more facts, circle No. 331

CONTRACTORS AND ENGINEERS



Heavy-duty wagon drill features air motor feed

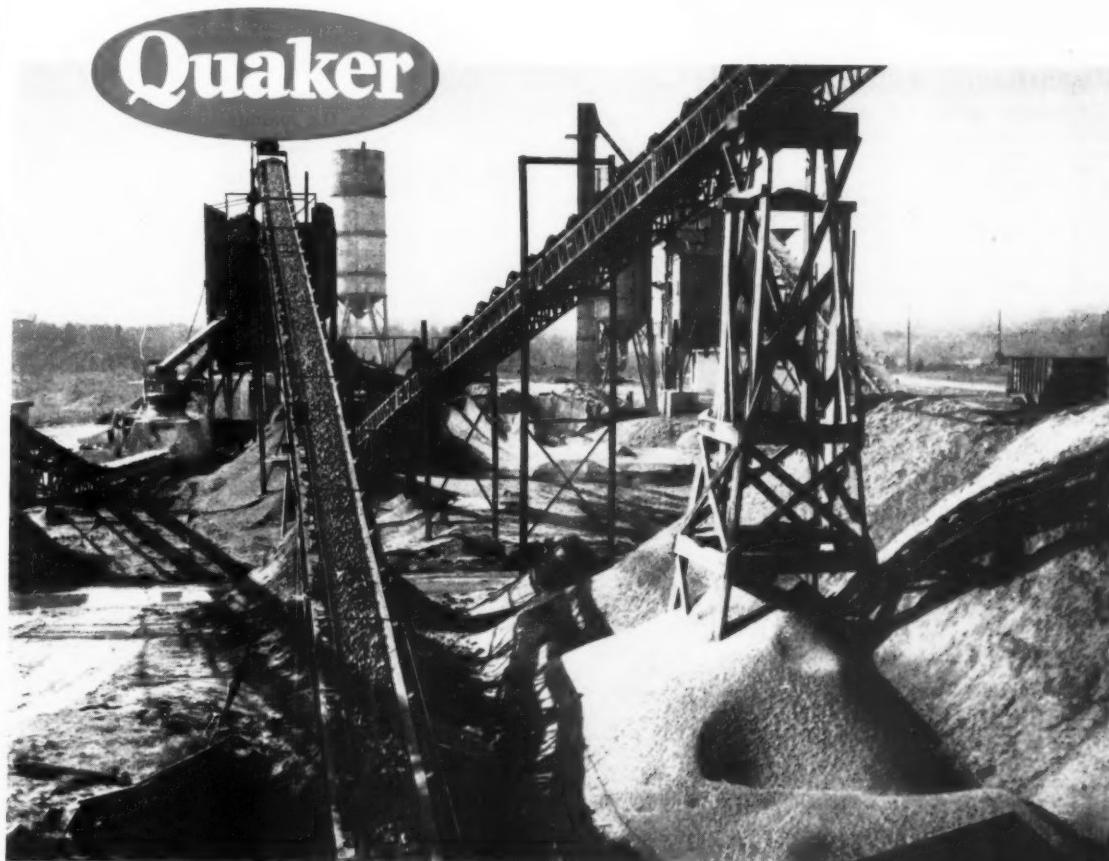
A heavy-duty wagon drill with an air motor feed that is said to eliminate most sticking of steel is announced by the Le Roi Division of the Westinghouse Air Brake Co. The DR40 also features a feed shell mounted behind the center line of the large wheel axles to provide a more substantial drilling carriage.

Designed for vertical or horizontal drilling in hard formations, the DR40 weighs 1,500 pounds, including 400-pound feed shell and the 126-pound, D14DR 4-inch drifter. The feed shell measures 13 feet and has a feed travel of 10 feet.

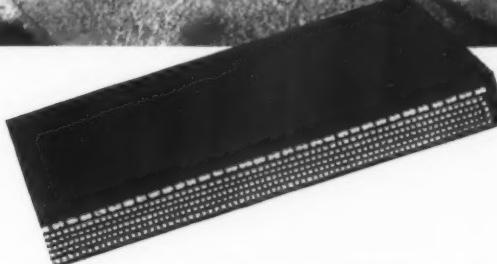
The air motor is of double lobe cylinder construction; a seven-blade rotor provides alternate power from opposed power lobes. This produces 14 power impulses in every revolution of the motor. Immediate air pressure from blade to exhaust assures high torque, the company reports.

For further information write to the Le Roi Division, Westinghouse Air Brake Co., 3716 W. Wisconsin Ave., Milwaukee, Wis., or use the Request Card at page 18. Circle No. 156.

FROZEN GRAVEL AND CLAY ARE NO PROBLEM for this Bucyrus-Erie 22-B drag shovel with $\frac{3}{4}$ -cubic-yard bucket. The rig is shown trenching for a sewer line in Milwaukee, Wis. For further information on the crane, write to the Bucyrus-Erie Co., South Milwaukee, Wis., or use the Request Card at page 18. Circle No. 124.



Takes the impact and roughest abrasion of sharp, jagged loads



SUGGESTION—To Far-Away Users—Buy your NEW Cores only without any filling or we will furnish complete Palmyra-Hickory or Bass Fibres—Even Steel Wire.

Road Builders—It's Sensational! !

BIG PECKERWOOD BIG C-O-N-T-I-N-U-O-U-S

Steel Wire Road Drag Leveler. Six (6) Inches Wide
—Name Your Length

Not STAPLE set.
In Stock Lengths of 4-6-8-9-10 or 12 foot.
Only \$3.50 Foot Approx. wt. $5\frac{1}{2}$ lbs. per ft.

NO FRAME REQUIRED

The LITTLE PECKERWOOD
3" Wide, 15' Length
This Fits Your Frame
NOTE—Both Drags
Can Be Finished
with Fibre.
Only \$2.50 Ea.

KENNEDY'S SINCE VAN BRUSH MFG. CO., INC. 1928 327 Southwest Blvd., Kansas City, Mo.

For more facts, circle No. 332

OCTOBER, 1956

No matter what you consider most important in a conveyor belt, there is a Quaker-Quaker Pioneer belt constructed to meet your need. This one, for instance, is especially made for tough shock resistance. Highly flexible, it is strong cotton duck, with average cover tensile strength 2500 to 3000 lbs. Skim coat between plies. For jobs requiring even greater toughness, tension resistance and flexing, Quaker can supply belts of new high tensile strength rayon or cotton-nylon fabrics of any desired cover thickness. Complete line offers industrial rubber products including hose, packing and moulded rubber for every use.

H. K. PORTER COMPANY, INC.
HKP

QUAKER RUBBER DIVISION
PHILADELPHIA 24, PA.

QUAKER PIONEER RUBBER DIVISION
PITTSBURG, CALIF.

For more facts, use Reader-Reply Card opposite page 48 and circle No. 333

Thor moves branch

Thor Power Tool Co., Aurora, Ill., has moved its factory sales and service branch in Detroit, Mich., to 14515

Puritan Ave., Detroit. This is the fifth expansion in company branches for this year; with the sixth to open later in Indianapolis, Ind., making the twenty-fifth branch in the Thor chain.

Power Plants Speed Construction

USE POWER TOOLS—FLOOD LIGHTS

WINPOWER PORTABLE ELECTRIC PLANTS

provide a dependable, low cost power source... speed up work performance by operating time and labor saving power tools. Wherever the job—whatever the need—you can count on a WINPOWER Electric Plant to meet your requirements.

A Different Size For Every Need

800 WATTS To 100 KW

All Standard Phases and Voltages

Trailer-Mounted Floodlight Unit

MAKE NIGHT HOURS PAY with NITE-HAWK

Four 80,000 c.p. flood lights raise to 8½ ft.—aim in all directions. Control panel has duplex receptacles for extension light and power tool lines—voltage regulator—circuit breakers—fused circuits.

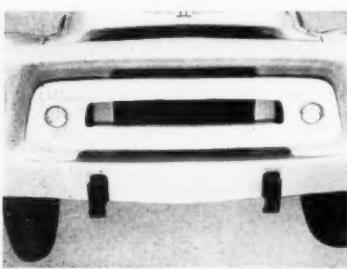
Tow at highway speeds on heavy-duty trailer with leaf springs—retractable castor wheel. This is the finest, most flexible unit available. 5 KW, 115 or 230 Volt.

WRITE FOR LITERATURE AND PRICES

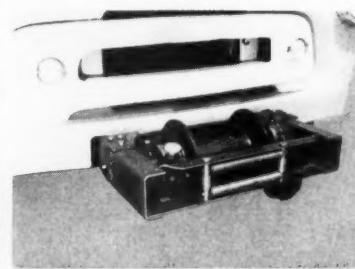
WINPOWER MFG. CO.
Dept. 211
Newton, Iowa

For more facts, use Reader-Reply Card opposite page 18 and circle No. 334

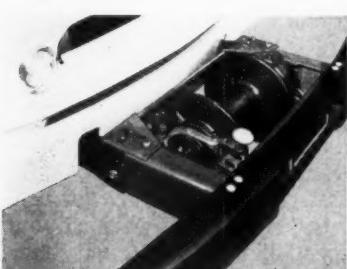
And Now... it's the NEW BRADEN MU3-2 Winch Kit for the New International S-120, 4 x 4



1 Remove bumper of truck.



2 Assemble and mount winch.



3 Cut out center part of bumper. Mount bumper on winch frame.

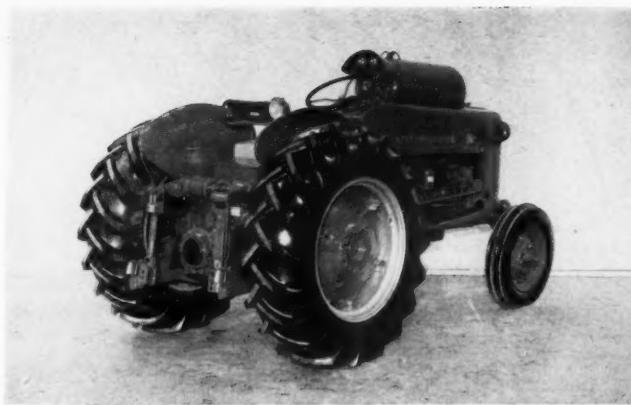
Kit contains a 6,000 pound capacity MU3 Braden Winch, PTO (For Warner "T9" Special Transmission) and all parts necessary for mounting on front of IHC S-120, 1956 truck. Can be mounted, ready for use, in about four man-hours.

Write to the Factory today for complete information, dimensional drawing, and installation instructions.

See Your Nearest
BRADEN Dealer

BRADEN
Winches

"IN SERVICE AROUND THE WORLD"
For more facts, use Reader-Reply Card opposite page 18 and circle No. 335



Liquefied petroleum is the fuel used by the new International 300 LP-gas utility tractor.

Announce tractor powered by liquefied petroleum

■ A tractor designed to operate on liquefied petroleum fuels has been announced by the International Harvester Co. The International 300 LP-gas Utility is a full 3-plow rig that provides approximately the same horsepower as the gasoline-powered International 300 Utility, according to the manufacturer.

Features of the new tractor include a higher compression ratio, 12-volt electrical system, micronic-type fuel filter, special carburetor, regulator-vaporizer unit, and a completely sealed fuel system with a special tank and controls.

The fuel tank has a safe LP capacity of 18.64 water gallons. The

filler connections and gages, as well as the operating controls, are mounted on the rear of the fuel tank within sight and reach of the operator. The tractor is fully protected by safety and excess-flow valves and conforms to all safety codes.

The LP tractor can be equipped with such features as Torque Amplifier drive, power steering, power-adjusting rear wheels, independent power takeoff, and Hydro-Touch implement control.

For further information write to the International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card at page 18. Circle No. 148.

Book on NSPE criteria of employment practices

Copies of the employment-practices criteria adopted by the National Society of Professional Engineers are available from the National Society headquarters, 2029 K St. NW, Washington, D. C.

The criteria, in check-list format, cover specific categories of engineer development. Topics included concern the recruitment, indoctrination,

professional development of the individual, salaries, engineering titles, personnel practices, and termination policies.

Single copies of the 23-page booklet are priced at 25 cents. Copies may also be ordered in bulk at a rate of 20 cents each for 10 to 49 copies, 15 cents each for 50 to 99 copies, and 10 cents each for 100 or more copies.

Buy MADESCO, and you benefit by over thirty years specialized experience in designing blocks for countless specialized needs. Available with heavy steel (or wood) shells, heavy fittings, plus iron or steel graphite bronze, self-lubricating sheaves, bronze or antifriction bearings. Madesco features sum up to safe, fast lifting, longer rope-life, trouble-free service. Consult your distributor for standard blocks for delivery from stock... and meantime write for our complete catalog. Special engineering services and recommendations also available.

MADESCO TACKLE BLOCK CO., Easton, Pa.

MADESCO
BLOCKS

For more facts, use Reader-Reply Card opposite page 18 and circle No. 336

New 25-ton crawler crane can be truck-mounted, too



A 3/4-yard, 18-ton crawler crane, designated as the 35-M, has been announced by the Marion Power Shovel Co. The new rig can also be truck mounted; as such it is rated at 25 tons and identified as the 35-MR.

According to the manufacturer, front-end attachments on the new unit can be quickly interchanged without any machinery modifications. The rig takes a shovel, a dragline, a clamshell, a crane, or a hoe.

All controls are pneumatically activated. The self-cleaning, non-clogging crawlers feature a drive sprocket design that sheds dirt and close-

spaced crawler shoes that prevent clogging of materials. The rig has an independent boom hoist for power up, power down control of the boom as standard equipment.

All high-speed rotating parts and hook rollers have antifriction bearings. Optional features include torque converters, independent travel, high gantry for boom over 55 feet, and power-removable counterweight.

For further information write to the Marion Power Shovel Co., Cheney Ave., Marion, Ohio, or use the Request Card that is bound in at page 18. Circle No. 38.

Electrode recommended for pipe-welding jobs

A new E-6010 electrode, Fleetweld 5-P, suitable for all E-6010 applications, is announced by the Lincoln Electric Co. The new electrode is especially recommended for pipe welding on root passes with a "vertical up" technique at low currents because it features smooth arc operation, deep penetration, and good bead wash-in, the manufacturer points out.

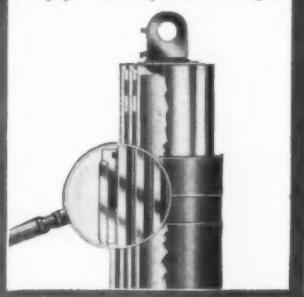
Fleetweld 5-P also provides minimum slag interference. It produces a flat-shaped bead in an even deposit from which slag is easily removed. It is available in 1/8 and 5/32-inch diameters.

For further information write to the Lincoln Electric Co., P. O. Box 5758, Cleveland 17, Ohio, or use the Request Card that is bound in at page 18. Circle No. 34.

THOUGH A MINUS-15-DEGREE TEMPERATURE and a 24-inch snowfall frosted the ground to a depth of 24 inches, this Syntron diesel pile hammer was able to replace old, weakened piling in a railroad trestle at a driving rate of 4 minutes per pile. The complete unit—a diesel crane with pile-driving leads and the Syntron hammer—used about 12 gallons of diesel fuel in an average working day, as compared to 3 gallons of fuel for a previously used steam rig. For more details on the pile hammer write to the Syntron Co., 227 Lexington Ave., Homer City, Pa., or use the Request Card at page 18. Circle No. 125.



Duo-scopic fully-telescoping hoist cylinder features precision ground sleeves and self-adjusting chevron-type seals. Synthetic rubber wiper rings guard seals against dirt damage.



Model 56381 forward mounted Duo-scopic hoist, capacity 22 tons. Optional center or outrigger mounting.

Whether you're leaving a burning building—or buying a forward mounted telescopic hoist—investigate before you act!

With a Galion Duo-scopic hoist, you'll get up to 1,500 lbs. of added payload capacity and the assurance of dependable performance with long, trouble-free service life.

AA-1181
Don't settle for less than the best—a hoist with Galion Allsteel quality construction plus Duo-scopic hoist cylinders . . . the finest that craftsmen can build!

Ask your Galion distributor
about Duo-scopic hoists today.

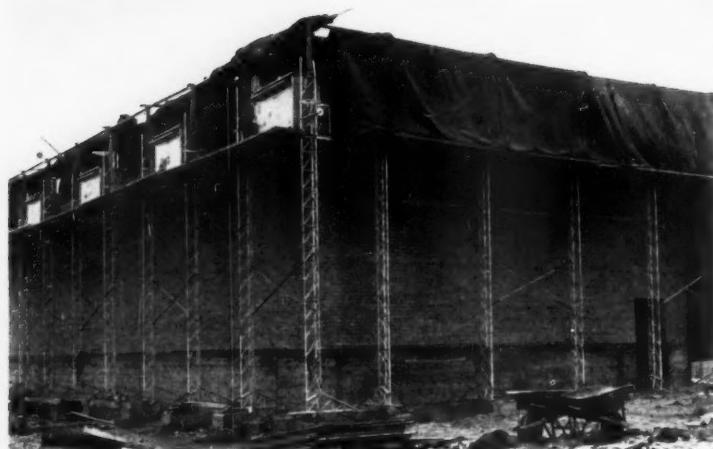


THE DUO-SCOPIC **GALION ALLSTEEL BODY COMPANY**
GALION, OHIO

For more facts, use Reader-Reply Card opposite page 18 and circle No. 338

OWATONNA TOOL COMPANY
381 CEDAR STREET • OWATONNA, MINNESOTA

For more facts, use Reader-Reply Card opposite page 18 and circle No. 337



Solid planking on the platform carriage of the Morgen scaffolding set-up kept drafts from rising from below. The LP gas heaters and fuel tanks, between every other pair of towers, kept the bricklayers and the material warm.

winter
work

Contractor's heating setup speeds winter bricklaying

Employing a carefully formulated heating plan, a Minnesota masonry contractor was able to complete work on the outside walls of a 22-foot-high, 170 x 566-foot warehouse a month

ahead of schedule, despite the fact that the masonry work was started in October and most of the job was done in temperatures that ranged as low as 10 degrees above zero.

The building was constructed at New Ulm, Minn., for the Kraft Foods Co. The masonry work required a total of 350,000 face brick units, 100,000 concrete blocks, and 250,000 glazed tiles. With the masonry operation commencing in October, all but 50,000 of the bricks had to be heated and protected during the operation.

The H. R. Gunnarson Construction Co., Chicago, Ill., was the general contractor. All masonry work was subcontracted to the Engelen Construction Co., Springfield, Minn.

The heating setup centered around the use of Morgen adjustable scaffolding, which provided a movable carriage suspended by cable from the top of the tower. The platform carriage was raised by means of a windlass as work on a wall progressed.

The scaffolding towers were used to support a wooden framework from which the canvas that enclosed the front of the wall was draped. Another wooden framework was built up along the back side of the wall and covered with canvas. Additional canvas was placed over the top of the tower. Solid planking on the platform car-

There's EXTRA Performance in EVERY ATTACHMENT

with AUSTIN-WESTERN All-Wheel Drive and All-Wheel Steer



V-Plow With All-Wheel Drive, there is plenty of power and traction for opening rounds—and especially important when thick crusts have formed on old snow.



Snow Wing Rear Steer makes it easy to maneuver around highway signs, or other obstructions; is also used to resist the side thrust of a heavy load on the wing.



Bulldozer All-Wheel Steer provides exceptional maneuverability under all conditions, and is also used to angle the blade on work like this, to shed the material sideways.



Roller Another attachment which often takes the place of a costly, single-purpose roller. It has many uses...on many materials, including gravel, blacktop and soil cement.



Plainsman Used for building new roads, widening old roads or raising grade elevations, this elevating grader can be attached or detached in a matter of minutes.



Scarifier Most popular of all attachments. All teeth are used for light work; while every other tooth can be removed for deep scarifying of hard material.

All-Wheel Drive for maximum mobility and 30 percent more Power-at-the-Blade—power that is made still more effective by Torque Converter drive. All-Wheel Steer for extreme maneuverability. Put them together and you

have teamwork that keeps Austin-Western Power Graders working where other graders fail. Austin-Western Works, Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Aurora, Illinois.

Power Graders • Motor Sweepers • Road Rollers • Hydraulic Cranes

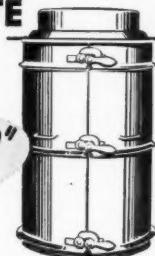


AUSTIN-WESTERN WORKS
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Construction Equipment Division
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Electronics & Instrumentation • Hamilton •
Loewy-Hydropress • Standard Steel Works
• Madsen • Pelton

For more facts, use Reader-Reply Card opposite page 18 and circle No. 339

CALL ON Quinn
For QUALITY CONCRETE PIPE FORMS

"STANDARD"
The World Over



Backed by over 45 years of reliable service, the QUINN Heavy Duty form is recognized as the STANDARD design and the finest concrete pipe form everywhere. Used in making pipe by vibration, spading or tamping. Sizes for pipe from 10" to 120" and larger. Tongue and groove (as shown) or bell end pipe in any length desired. If your pipe orders specify extra large sizes, odd shapes or unusual lengths, there's a Quinn form made to produce the finest pipe at lowest possible cost.

Also Manufacturers of
QUINN CONCRETE PIPE MACHINES

Free CATALOG

Illustrates our complete line of equipment. Contains pages of valuable tips for the concrete pipe manufacturer. Write today for your free copy and estimates.

Quinn WIRE & IRON WORKS
BOONE, IOWA
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CONTRACTORS AND ENGINEERS

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LP gas heaters designed by the contractor kept the working side of the wall warm, and heated the bricks as they were used. Here, a tender slides bricks along the sloping shelf of a heater, warming them for use.

riage completed the enclosure.

A pair of Herman Nelson portable heaters were set up at the base of the back of the wall to blow hot air under the canvas and keep that side warm for drying. The masonry contractor mounted LP gas heaters of his own design on the platform to keep the masons and that side of the wall warm. Six-hundred-pound gas tanks were used and held sufficient fuel to run the heaters until the wall was topped out at 22 feet.

Because the scaffold platform could be raised without disturbing anything, the heaters and planking were handled only once.

"We found heating much easier," Ted Engelen pointed out, "because we didn't have to hoist salamanders and because we had a place to support the protecting canvas, which is often a main fire hazard."

Another factor which contributed to the completion of the masonry work a month ahead of schedule was the continuous platform height adjustment possible with the Morgen scaffolding. Bricklayers, especially the older ones, were able to do their jobs working at waist level. Because there was no stooping or reaching, fatigue was at a minimum.

THE END



Canvas supported by a wooden framework was used to keep the back of the wall warm for drying. A pair of portable heaters at the base of the wall blew hot air up under the canvas covering. ▶

all mobile radio users need this dependable receiver

for silent monitoring of Civil Defense alerts!

Rules and regulations of the FCC require every station in the Amateur, Standard Broadcasting, Public Safety, Special Industrial and Land Transportation Radio Services to observe all Conelrad radio alerts.

RCA Conelrad Receiver \$115*
complete and ready to use

In buying equipment for Civil Defense monitoring purposes, you will want to have the most foolproof equipment. RCA's Type CR-17A Conelrad Receiver offers the following noteworthy features:

1. Silent, annoyance-free monitoring plus provision for audible monitoring and external alarm.
2. Automatic switching to preset Conelrad frequency in event of an alert.
3. In absence of radio signal, automatic switching between broadcast station and

Conelrad "cluster" stations until signal from one or other is received.

4. Designed for continuous operation.
5. Two tuning sections—Section 1 is tunable to any frequency in broadcast band; Section 2 is preset to Conelrad frequency 640 or 1240 kc.
6. Supersensitive, permanent-magnet electrodynamic speaker assuring fine performance and volume.
7. Fulfils requirements of Federal Communications Commission.

Use coupon for ordering or information

Radio Corporation of America
Communications Products, Dept. K-277
Building 15-1, Camden, N. J.

Please send me _____ RCA Type CR-17A 550-1600 MC Conelrad Receivers @ \$115 ea.
 Check enclosed Bill Company
We absorb shipping charges within Continental U.S.A. on all prepaid Conelrad Receiver orders.
 Send me complete information.

NAME _____ TITLE _____
COMPANY _____
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EAGLE AGGREGATE WASHING-CLASSIFYING EQUIPMENT CAN SOLVE YOUR PROBLEM!

Eagle pioneered concrete aggregate washing - classifying - dehydrating equipment. Eagle engineers have vast experience. Eagle has more installations than all other makes combined. Eagle has the broadest line. Nationwide factory trained sales-service organization.

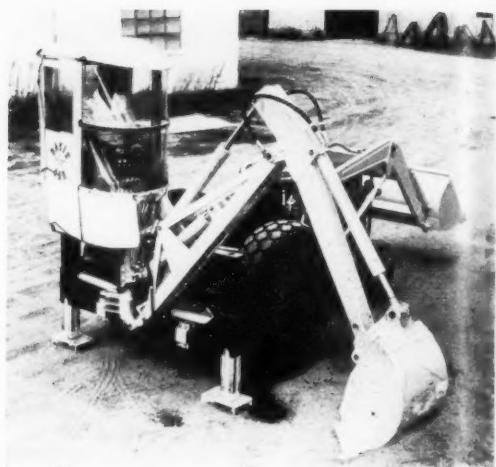
EXPERIENCE, PROGRESS, SERVICE, SINCE 1872
EAGLE IRON WORKS
159 HOLCOMBE AVE., DES MOINES, IOWA

FINE MATERIAL WASHERS LOG WASHERS "SWINTER" BRIDGE LADDERS BREAKER BALLS & PILE HAMMERS

For more facts, circle No. 341



FABRICATED mostly of parts from a Caterpillar tractor and Hyster winch, this special low-ground-pressure tractor has been developed by the U. S. Army Corps of Engineers for towing trains of supplies and material over snow and muskeg in Arctic regions. Powered by a 225-hp six-cylinder engine, the unit has a ground pressure of 3.4 psi. The tractor has an extended track frame and its track shoes are 54 inches wide.



F. E. Stedke reports:
"We have used Richmond Spiders
on numerous jobs with very good results,
both from a standpoint of utility and service."

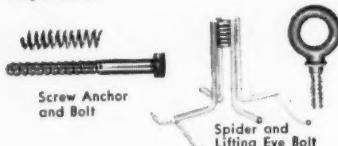


Lifting 15-ton pre-cast wall unit in construction of Neon Products Building. 1" double Richmond Spiders were used. Stedke Construction Co., Lima, Ohio; contractors.

Pre-casting & Lifting Concrete Slabs

Richmond Spiders contribute speed and safety

Contractors recognize that tilt-up construction using thin, pre-cast slabs offers substantial economies for certain types of buildings—when properly used. The method, originally developed in the Far West for earthquake resistance, has spread rapidly across the country. In employing it, selecting and placing the slab-lifting inserts, to ensure that the load is carried and distributed correctly, is extremely important.



Since, for example, the slab-lifting inserts near the top of the slab carry virtually the total load when the initial pick-up is made, severe impact and handling loads in both tension and shear develop in them. A substantial safety factor is a must—and that means extra strong, reliable insert units, and a conservative load application.

With its Spider Anchors, especially designed for pick-up and placement of thin slab sections, Richmond recommends that at least 50 per cent impact be added to the dead load to establish a working load. A 2:1 safety factor should be maintained in the relation of this working load to the established ultimate strength

of the anchorage units in the concrete. Equally important, the anchorage units should not be figured at full strength until the concrete of the slab has reached a minimum compressive strength of 3,000 lbs. p.s.i.

Tests have shown that the actual tensile strength of Richmond Spiders is far greater than Richmond's recommended maximum working load—a margin of safety that gives you added assurance of a fast, economical job. There are Richmond Slab Anchors especially designed for anchoring blocks and fixtures to the floor slab for bracing slabs into vertical position; Slotted Lagstuds for setting Spiders so as to permit screed finishing; Square-Head Tylags for anchoring lifting fixtures. Richmond drop-forged steel-lifting Eye Bolts are designed to develop the full strength of the bolts.

The new Richmond Handbook gives complete technical data on these and all other Richmond-engineered tying devices, anchorages and accessories. It will help you to pour concrete better and more economically. It's yours for the asking. Write to RICHMOND SCREW ANCHOR COMPANY, INC., 816 Liberty Ave., Brooklyn 8, N. Y. or 315 South 4th St., St. Joseph, Mo.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 343

Backhoe now available with all-weather cab

The Davis backhoe, manufactured by Mid-Western Industries, Inc., is now available with an all-weather cab that protects the operator from bad weather and cold. The cab fits onto the backhoe seat and foot-rest assembly and revolves with the boom.

The framework of the cab is made of flat steel and is covered with duck canvas. It has a lighthouse-type window made of nonbreakable, shatter-proof plastic. The sides and doors can be removed when they are not needed.

The Davis backhoe operates at right angles to the tractor and through a full 180-degree arc. The seat revolves with the boom so that the operator is always facing the direction in which he is doing his work.

For further information on Davis backhoes and all weather cabs write to Mid-Western Industries, Inc., 1009 S. West St., Wichita, Kans., or use the Request Card at page 18. Circle No. 152.

Argentine road program to use imported equipment

A five-year program of farm-road construction, involving an expenditure of 1.5 billion pesos, has been announced by the Ministry of Public Works of Argentina. Since Argentina only produces an assorted but limited range of construction machinery, a supply will have to be imported.

No one company makes more than a few types of machinery, and no single machine is produced in large quantities. For example, the industry

estimated that during 1955, only one 20-ton-per-hour bituminous plant was produced in the country and only one bituminous finisher. Three reciprocating feeders, five each of scrapers and stone spreaders, and 30 crushers were produced.

According to trade reports, however, the industry has expanded appreciably in recent years. Even within its range, the industry does not have the capacity to cover normal demand.

WARRINGTON-VULCAN

Single-Acting Steam Pile Hammers Deliver Steady-Heavy Blows

Backed by 68 years of outstanding performance,
the Warrington-Vulcan delivers a moderate
frequency of low velocity blows from a heavy
ram. Operates at medium steam pressure.
Built-in durability assures continuous, positive
action, free of mechanical difficulties.

The 22 pages of Bulletin 68-D describe
single-acting steam pile hammers. A
table of recommended sizes for driving
various types of piles is given. Send for
your free copy to:



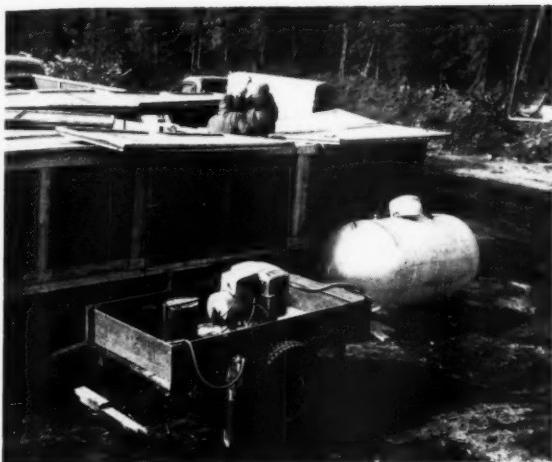
VULCAN IRON WORKS
327 NORTH BELL AVENUE
CHICAGO 12, ILLINOIS

**Manufacturers of Pile Driving Hammers
and Pile Extractors since 1852**

For more facts, use Reader-Reply Card opposite page 18 and circle No. 344

CONTRACTORS AND ENGINEERS

Electric plants serve many purposes in work on bases for power line



An Onan Model 305CCK-IR plant stands ready to power electric fans that will blow warm air from butane heaters over the concrete bases that are being formed for the power line.

Electric plants did more than double duty during wintertime construction of concrete bases for a transmission line running 63 miles from Lake Superior to Babbitt, Minn.

This 32,000-volt power line, built for Erie Mining Co. at a cost of \$5 million was designed to supply electricity for a residential development and a new taconite processing plant. Hallett Construction Co., Crosby, Minn., had the job of constructing the bases for the line in an area that is one of the coldest in the U. S. once winter closes in.

On this job, the contractor had 28 Onan gasoline-driven electric plants

performing a variety of work. They supplied power for lights when inspections were made after dark, and they supplied power for vibrators when concrete pours were made. The fans that circulated warm air from butane heaters to cure the concrete were also powered by the plants. All during the course of the job, the units, protected from freezing by air-cooled engines, operated well. Even under adverse conditions, and despite the rough handling they received when being moved over rugged terrain, the plants started immediately and ran continuously during the course of the job.

Piping group elects

The Clay Sewer Pipe Association, Inc., with headquarters in Columbus, Ohio, has appointed Paul R. Rutherford as president of the organization.

He succeeds Maurice Maskrey, who has resigned. The association is organized to promote and develop the proper use of vitrified clay pipe.

Labor and Time Savings on the Job!

HANDLE MANY JOBS WITH THESE ATTACHMENTS

POWER-PACK BACKFILLER

Performance proved! Everywhere POWER-PACK has been used great savings result in labor and time . . . also you can expect a better fill with no material wasted! Only one man operating the POWER-PACK can power-backfill curbing, trenches, and pipelines at the rate of three tons per minute! This equipment has actually paid for itself on a single job.

Ruggedly built for long service. Easily portable with four swivel wheels and a sure, quick hitch. Can be used with any size dump truck including trailer dumps. Dependable 8.25 Wisconsin engine. Heavy duty belt.

To save time and money investigate POWER-PACK today! Write for booklet or phone your distributor.

Strike-off Box Attachment. For road widening fill and asphalt paving. Adjustable on three sides to 6" above grade. Strike-off blade extends 4'. Remove with one pin.



Conveyor Extension Attachment. permits backfilling 24" high curb or placing material over front wheels. Take-off drive. Unit is 4' long with independent belt.

Distributors: Write for information on available territories

POWER-PACK CONVEYOR CO.
13910 Aspinwall Avenue
Cleveland 10, Ohio

For more facts, use Reader-Reply Card opposite page 18 and circle No. 345

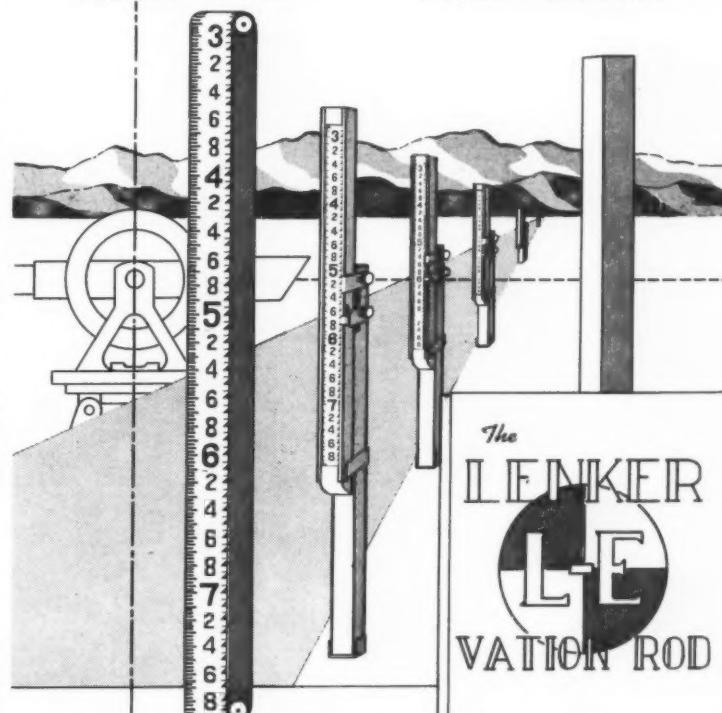
OCTOBER, 1956

THE BROS SERIES A ROTARY SNOWPLOW defeated all other machines in its class to win the highest award for snow-removal performance at the 1956 international competition in France. The plow, mounted on a British LandRover and powered by a four-cylinder air-cooled engine, handled up to 7 tons per minute of wet or hard snow, casting it up to 50 feet away. The engine and mounting frame were designed by the British Rotary Snow Plow Co., London, Bros European manufacturer. For more information on the plow write to the Wm. Bros Boiler & Mfg., 1057 Tenth Ave. S. E., Minneapolis, Minn., or use the Request Card at page 18. Circle No. 15.



ENDLESS BAND

DIRECT READING



The new approach to fast accurate leveling

● THE ROD

The Lenker L-E Vation rod is a weatherproof maple two-section surveying rod designed for modern engineering needs.

The rod is 5.4 feet long when closed and 10 feet when extended. By using our 4 foot boot this can be increased to 14 feet.

● THE BAND

Numerals are printed on a white durable 10 foot endless steel band graduated in feet either to tenths and hundredths or to inches and eighth inches.



The Lenker L-E Vation rod has been awarded the EDWARD LONGSTRETH MEDAL OF MERIT by the Franklin Institute

For more facts, use Reader-Reply Card opposite page 18 and circle No. 346

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Avoid legal pitfalls

Arbitration award upheld by a court

THE PROBLEM: When arbitration proceedings are not tainted by fraud and have been otherwise conducted legally, the courts are usually powerless to disturb the award. A contract to construct college buildings provided that disputes were subject to arbitration under the procedure provided for by the American Institute of Architects. In a court proceeding to vacate an award in favor of the defendant owner, (1) Could one of

the arbiters testify as to what matters were submitted for decision by the arbiters and what were considered? (2) Was the award void where it was not signed by the arbiters in the presence of each other? (3) Was the award void because one arbiter, an attorney, prepared it, in accordance with an opinion rendered by another arbiter of the three-man board?

THE ANSWERS: (1) Yes. (2) No. (3) No. (*Griffith Company v. San Diego College for Women*, 289 Pac. 2d 476, decided by the Supreme Court of California.)

(1) But the court noted that an arbiter cannot discredit an award by testifying that he was guilty of fraud or misconduct in approving it. (2) Signing of an award by arbiters at different times and places is not to

be approved, but does not necessarily invalidate an award.

The court decided that the award was not invalid because one of the arbiters talked with an attorney to check his conclusions. It was not necessary that all the arbiters join in seeking such advice.

protest waived by the government?

THE ANSWER: Yes. (*Palumbo v. United States*, 113 Fed. Supp. 450, decided by the United States Court of Claims.)

Wet concrete causes accident to pedestrian

THE PROBLEM: A building company owned and was erecting an apartment house. A concrete subcontractor parked its truck-mixer across an abutting sidewalk, and permitted wet concrete to fall onto the walk. Though using reasonable care for her own safety, a pedestrian slipped upon the material, fell, and was seriously injured. (1) Was the building company jointly liable with the subcontractor in damages on account of the accident? (2) Was the building company entitled to compel the subcontractor to reimburse it for damages collected by the pedestrian?

THE ANSWER: (1) Yes. (2) Yes. (*Lipman v. Well-Mix Concrete, Inc.*, 138 N. Y. Supp. 2d 316, decided by the New York Supreme Court, Kings County.)

The court said: The subcontractor was negligent in permitting wet concrete to fall from the truck in such a way as to impede sidewalk traffic without warning pedestrians of the danger.

The building company, as both owner and general contractor, knew that concrete was being delivered and that pedestrians would be endangered if wet concrete should fall from the truck and remain on the sidewalk. So, though that company was jointly liable with the subcontractor to the injured pedestrian, the accident was primarily due to the subcontractor's carelessness, and the subcontractor should reimburse the building company for whatever it had to pay the pedestrian.

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Edited by A. L. H. STREET
Attorney-at-Law
These brief extracts of court decisions may aid you. Local ordinances or state laws may alter conditions in your community. If in doubt consult your own attorney.

Non-resident contractor must pay state income tax

THE PROBLEM: In filing its Mississippi income-tax return, could a Louisiana dredging company, which had operated in Mississippi, apportion losses incurred in other states against income from jobs in Mississippi?

THE ANSWER: No. (State of Mississippi v. McWilliams Dredging Co., New Orleans, decided by the Mississippi Supreme Court, April 16, 1956.)

The court upheld a ruling by the Mississippi Tax Commission that existing regulations, permitting such apportionment, were applicable only to manufacturing companies. The Supreme Court said that, by insisting upon the right to charge "an unreasonable amount of so-called idle shop account," the company had attempted to cancel Mississippi income. If conditions in Mississippi were more favorable to profit-earning than those in other states, Mississippi should not be penalized by deduction because of operations in Louisiana, Texas, Illinois, and North Carolina.

Unsigned contract invalid

THE PROBLEM: A prime contractor's manager prepared a subcontract and gave all the copies to the subcontractor for signature and procurement of bond. The papers were then to be returned to the contractor for his signature. The subcontractor was

told to be ready to start work when materials were on hand. The contractor later refused to sign the contracts. Was the contractor bound by the fact that the parties had orally agreed upon all of the terms of the agreement before he embodied them in a written contract?

THE ANSWER: No. (Simmons & Simmons Construction Co. v. Rea, 286 S. W. 2d 415, decided by the Texas Supreme Court, and reversing a contrary decision by the Texas Court of Civil Appeals, San Antonio, 275 S. W. 2d 747.)

The court recognized that the circumstances of a particular case may be such that when the parties have orally agreed upon all the terms and conditions of a contract the fact that

it is to be written does not necessarily postpone the agreement's taking effect. However, if either or both parties indicate the intention that there is no contract until it has been signed, that intention will be given effect by the courts.

Subcontractor waived right to counterclaim

THE PROBLEM: A highway contractor sued a subcontractor for alleged breach of contract. By failing to present his claim as a counterclaim in the general contractor's suit, did the subcontractor waive the right to start a later suit to collect damages from the general contractor?

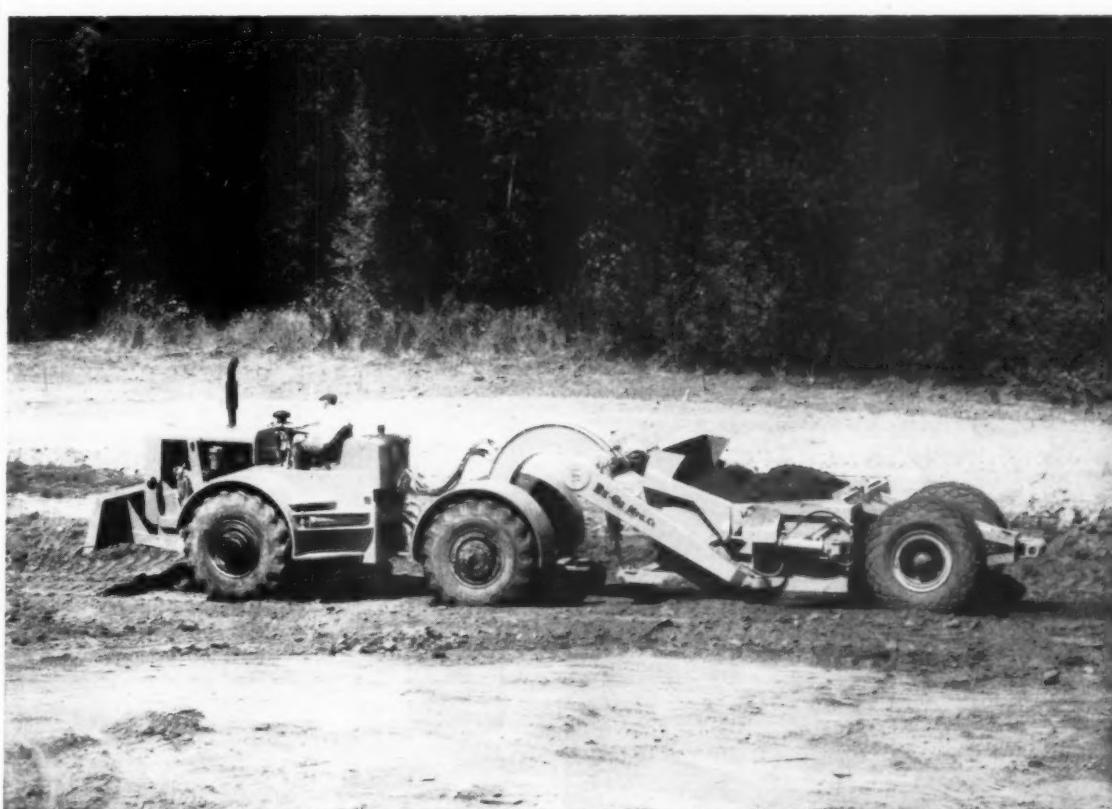
THE ANSWER: Yes. (Flickinger v.

Swedlow Engineering Co., 289 Pac. 2d 214, decided by the California Supreme Court.)

The decision was based on a California statute relating to the litigation of counterclaims. The court said that since the counterclaim had been waived, the subcontractor could not maintain suit on the general contractor's bond. The surety was entitled to assert any defense to a suit on the bond that the general contractor could assert.

Repair of storm damage caused during progress

THE PROBLEM: Plans for government buildings in Montana called for ventilation slots under the eaves. The



Wagner Model IND-14 Tractor equipped with Fuller R-96 ROADRANGER Transmission.

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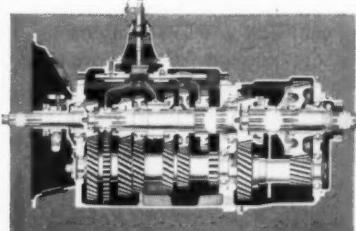
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For more facts, circle No. 349

OCTOBER, 1956

Avoid legal pitfalls

contractors' warning that such slots were not suited to the local snowy climate were disregarded. All exterior work was completed. When a three-

day blizzard subsided, it was discovered that snow had blown through the slots and had done considerable damage to the interiors. Government representatives directed the contractors to remove the snow and repair the damage. Were the contractors en-

titled to payment under the Tucker Act of the reasonable value of that work, plus 15 per cent for overhead and profit, even though the contract specified that the contractors should be responsible for the work until its completion, and the work had not been completed or accepted?

THE ANSWER: Yes. (Halvorson v. United States, 126 Fed. Supp. 898, decided by the United States District Court, Eastern District of Washington.)

There being no dispute as to the amount due if the government were liable, the court allowed interest from the date of presentation of the claim.

nois Appellate Court, First District, Third Division.)

Although the operators of the crane were regular employees of the lessor, they were for the time being the employees of the lessee.

Texas compensation law covers Sunday accident

THE PROBLEM: A contractor's employee used his own truck to carry tools belonging to the contractor. He was injured while making necessary repairs to the truck on a Sunday. Was he entitled to an award under the Texas workmen's compensation law?

THE ANSWER: Yes. (Superior Insurance Co. v. Jackson, 288 S. W. 2d 149, decided by the Texas Court of Civil Appeals, Dallas.)

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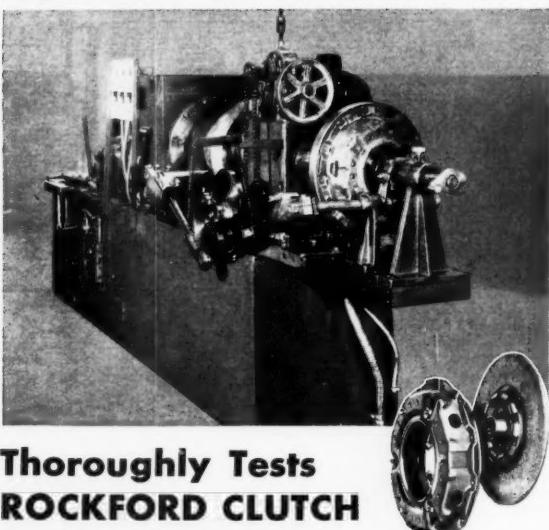
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Subcontractor liable in damages for delay in work

THE PROBLEM: Was a subcontractor on a levee-construction job liable to the general contractor for damages brought about by delayed performance of the subcontract? The subcontractor was aware that the general contractor would be liable to the owner in liquidated damages if the job were not completed within a certain time.

THE ANSWER: Yes. (Frees & Laine, 78 So. 2d 187, decided by the Louisiana Court of Appeals, New Orleans.)

The court said that the damages collectible by the general contractor from the subcontractor included wages of a foreman retained pending the delay, as well as social-security taxes and workmen's-compensation premiums paid on the foreman's behalf.

Contractor may withdraw bid submitted in error

THE PROBLEM: In his haste to prepare a bid for construction of piers for a state bridge, the defendant omitted a cost item of about \$35,000 for steel piling from the amount of the bid. The omission had been an honest mistake. No action had been taken on the bids when the mistake was discovered and the defendant attempted to withdraw his bid. The state had not been prejudiced in any way. The next-low-bid was \$60,281 higher than the defendant's, and the state sued to collect on the bid bond. Was the defendant entitled to a judgment cancelling the bid and bid bond?

THE ANSWER: Yes. (State of Oregon v. State Construction Co., 280 Pac. 2d 370, decided by the Oregon Supreme Court.)

Lessee held liable for damages to crane

THE PROBLEM: A crane was leased under an agreement that the lessee would hire and pay the crew to operate it. The lessor recommended certain men as capable operators. The crane was damaged through negligent use directed by the lessee's superintendent. Assuming that the crew members' negligence contributed to the damage, was the lessee liable?

THE ANSWER: Yes. (Donald B. MacNeal, Inc. v. Timber Structures, Inc., 127 N. E. 2d 504, decided by the Illi-

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CONTRACTORS AND ENGINEERS

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■ Five types of winter hat liners, for head protection in extreme temperatures, are available from the E. D. Bullard Co. The liners are for use under safety hats and caps.

Wind-resistant fabric liners are waterproof and have either fleece or wool interiors. They are available with or without earlaps. Waterproof



knitted wool caps also are available in two types. One is a close-fitting skull cap and the other is an elastic-knit skater's type that covers the neck and ears. All are available in either medium and large, for head sizes between 6 1/2 and 7 1/4.

An arctic-type wool cap covers the entire head, face, neck, nose, and mouth, leaving only the eyes exposed. The mouth section is removable. In areas of extreme cold, the fabric and wool liners may be worn together.

For further information write to the E. D. Bullard Co., 275 Eighth St., San Francisco 3, Calif., or use the Request Card at page 18. Circle No. 127.

Film on vermiculite

The latest techniques in the machine application of three vermiculite products are shown in "New Horizons in Plastering", a 16-mm sound-color film.

The tools are shown at work, applying vermiculite plaster, acoustical plastic, and concrete on various jobs, ranging from small homes to skyscrapers. The film also shows how vermiculite acoustical plastic is applied directly to the underside of steel floors and roofs for fireproofing purposes and how vermiculite plaster fireproofing is used to reduce structural steel and foundation costs. Construction of the new vermiculite concrete spandrel wall is also covered.

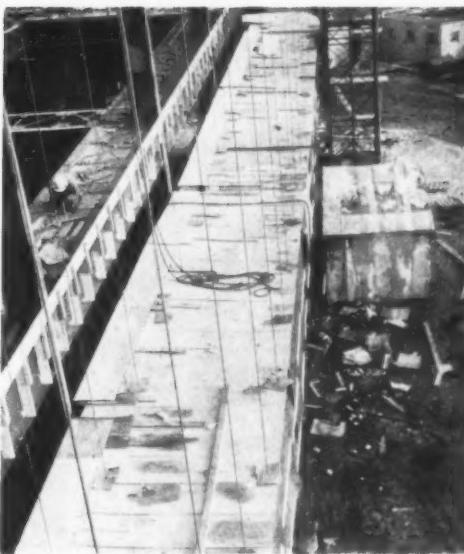
The film runs 20 minutes, and can be had by application to the Vermiculite Institute, 208 S. LaSalle St., Chicago 4, Ill.

Hose, fittings catalog

■ A condensed catalog listing hose and fittings manufactured by Aerquip Corp. is now available. Data is given on assembly and installation. The catalog also contains complete information on low, medium, and high-pressure hose and fittings; adapters; and self-sealing couplers.

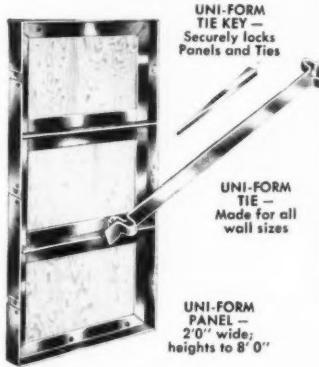
To obtain Catalog No. 174 write to Aerquip Corp., 303 S. East Ave., Jackson, Mich., or use the Request Card at page 18. Circle No. 43.

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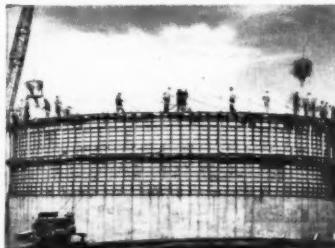
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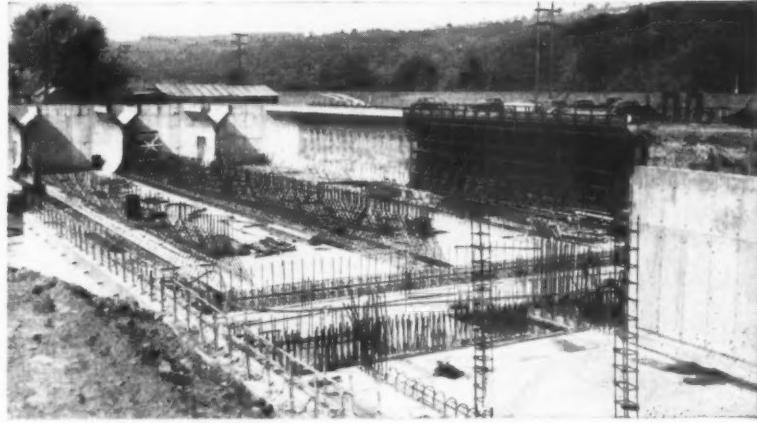
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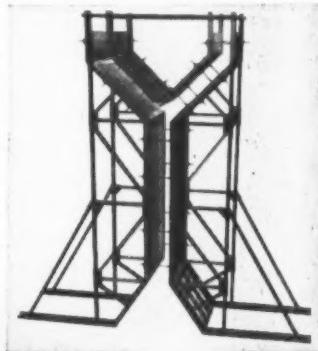
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The controversial right-to-work question continues to have its ups and downs in various parts of the nation. Recent developments find it up in Kansas, down in Nevada, and between in Washington.

A plank endorsing passage of a right-to-work law has been nailed to the platform of Kansas Republicans. In so doing, the state GOP indicated its endorsement of Warren W. Shaw, who won the gubernatorial candidacy in a closely watched primary, defeat-

ing the incumbent GOP governor, Fred Hall. A major campaign issue was the candidates' positions on the right-to-work question. During 1955, Gov. Hall vetoed a right-to-work bill; during the primary, he openly debated against the merits of such legislation with Shaw.

In Nevada, a two-part initiative petition that would repeal the right-to-work law now on the books and amend the state constitution to secure the right of collective bargaining

through unions and sanction union-shop contracts has the Nevada Citizens Committee up in arms.

The constitutional amendment would require union membership under union-shop contracts as a condition of employment. The committee commented that "to our knowledge, this is the first time that a proposition has been placed on the ballot to make union membership a basic condition of employment." The committee pointed out that a constitutional

amendment could never be altered by the state's Supreme Court, its governor, or its legislature.

Meanwhile, the AFL-CIO has predicted the defeat of a right-to-work proposal in the state of Washington. An initiative petition that would put a right-to-work law on the statute books may be challenged by union attorneys on the grounds that its circulation through the mails violated certain laws. But even if the petition remains on the ballot, the AFL-CIO said, it will be defeated by the voters next month.

Labor's optimism stems from the fact that the number of valid signatures obtained for the petition, while enough to get it on the ballot, is well below the number the sponsors of the petition estimated would be forthcoming. The petition had 64,000 signatures, 60,109 of which were certified as valid by the Washington Secretary of State. A total of 50,000 signatures is required to put a proposal on the ballot.

A Labor Arbitration Information Service, designed to provide a means for member employers to obtain information on arbitrators suggested to them for settlement of labor disputes, has been inaugurated by the Commerce and Industry Association of New York, Inc. "Making effective use of the labor arbitration process has become a matter of increasing concern," the association asserted in its statement announcing the new service.

The statement explained that "firms are being asked to provide . . . names of arbitrators they have used. Then, as the service develops, upon inquiry about a suggested arbitrator, names of officials in companies who have had recent dealings with the particular individual and can pass on the benefit of their experience will be furnished wherever possible."

So that no participating official will be burdened with too many inquiries, a check system will be employed to limit the number of referrals to any one person, the announcement said.

Jurisdiction, merger, and politics were the three major topics at the recent United Association convention in Kansas City. The largest convention in UA history, there were 2,536 delegates representing 706 locals, 36 state associations, and four provincial associations in attendance.

A considerable portion of general president Schoemann's opening address was devoted to a review of jurisdictional problems with other craft unions. The review covered disputes involving the carpenters, ironworkers, laborers, machinists, sheet metal workers, teamsters, electrical workers, and operating engineers.

The AFL-CIO merger and the craft-industrial jurisdictional questions were also thoroughly analyzed. "The UA has followed and will continue to follow a policy of recognizing its full trade jurisdiction as com-

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Bucyrus-Erie Hydrocranes have long been noted for big lifting capacity per pound of crane weight. Now the new Model H-3 Hydrocrane—mounted on a lightweight, low-cost truck—gives you 10,000-lb. maximum lifting capacity. And the new Model H-3 retains short tail swing characteristics that have made Hydrocranes standouts on close-quarter work.

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Vibration-proof locking throttle control, conveniently located at operator's finger-tips, permits him to set and hold engine at desired speed.

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pletely unrestricted and unimpaired by the merger," the UA officers' report stated.

Though the union insists upon "militant organizing" to the "full limits of its traditional jurisdiction", it will "cooperate to the fullest in resolving conflicts through fair and workable methods which, at the same time, preserve its dignity as a duly chartered craft union."

It is estimated that the five-day conclave cost the UA about \$2 million.

Actions taken recently by the Ohio Building & Construction Trades Council appear to have successfully prevented a merger of the state's AFL and CIO groups at this time. The building trades are understood to have taken their stand because of the unsettled relations with industrial unions over jurisdiction of plant maintenance and extension work.

At the Ohio building trades' convention, a resolution was passed demanding settlement of the jurisdictional problem before the state merger was effected. A national committee of leaders from industrial and building trades unions has, in recent months, met several times to work out such a settlement, but there has been little, if any, progress on the subject.

The Ohio State Federation of Labor held its convention following the building trades' conclave. The federation's Committee on Cooperation, headed by the state building trades president, John E. Breidenbach, pigeon-holed a resolution supporting a merger by referring the resolution to the executive committee. The resolution was still with the committee when the convention closed.

The record of 210,000 on-the-job injuries to building tradesmen in 1955 has been described as "sad" and "disgraceful" by the AFL-CIO Construction Trades Department's official monthly publication. A recent issue of the "Bulletin" noted that last year's figures included 2,500 fatalities and 6,600 instances of some degree of permanent injury.

The "Bulletin", quoting Department of Labor figures, pointed out that the chances of a construction tradesman having an accident are three times greater than that of a worker employed in manufacturing. The official publication also presented figures showing that a lost time accident, involving a tradesman will keep him away from his job three and one-half times longer than a similar accident involving a manufacturing worker.

Though the "Bulletin" did not come up with any new suggestions, it did call attention to the safety program operated by the Dallas, Texas, Construction Safety Council. Under this setup, a worker spotting a hazardous condition notifies his steward. The steward takes it to the next step in the chain of command and various representatives of both the union and the contractor try to work out a satis-

factory adjustment. Should this fail, an insurance safety engineer comes in.

The safety engineer's suggestions on the matter are more or less binding by general agreement. The contractor realizes the insurance company, wanting to retain his business, will recommend only necessary safety measures. The union knows the insurance company will not let hazardous conditions remain uncorrected because it does not want to court the expense of large claims resulting from injuries due to the hazards. Therefore, the safety engineer is recognized

as an impartial judge by both sides.

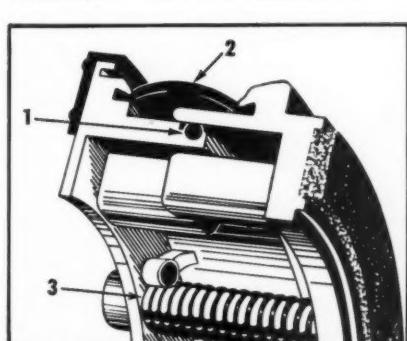
An NLRB trial examiner has ordered a Long Island, N. Y., local of the International Union of Operating Engineers to stop bargaining for its members. Examiner David London said that Local 138 has been "dominated" by an employer organization—the Nassau & Suffolk County Construction Contractors Association and its 28 member firms.

The local, made up of heavy construction equipment operators, was headed for 15 years by William C. DeKoning, who was convicted of extortion in 1954. His son, William C.

DeKoning, Jr., now runs the local.

The 23-page ruling will become effective October 10 unless the union appeals to the NLRB's national board before that date. It is the result of months of hearings initiated by a reform group in the local headed by Peter Battalias.

Battalias is one of ten reform leaders who have been trying to oust the local's high command for several years. He was one of the insurgents who made a broadcast on labor racketeering with columnist Victor Riesel the night the latter was blinded by acid last April.



Sure-Seal Features

- Outer Bellows Seal impervious to grease and oil.
- Inner "O" ring seal gives double protection.
- Heat-treated springs hold leather and cork sealing faces tight without adjustment. Give long life, positive sealing against dirt and water.

Give Your Tractor Double Protection Against Final Drive Lubrication Loss

Sure-Seal®

FINAL DRIVE BELLOWS SEAL

Sure-Seals protect your tractor against loss of final drive lubricant by using an inner seal in addition to the regular outer bellows seal. This extra seal is a neoprene "O" ring riding inside two metal flanges which prevents the lubricant from reaching the bellows. Protect your investment, guard against down time—install Sure-Seal Final Drive Bellows Seals with double protection. Made for Caterpillar D-4, D-6, D-7, D-8 and TD-24 tractors.



LOCKS GREASE IN—DIRT OUT

Sure-Seal Equipment Co. 1820 N.W. 25th AVE., PORTLAND 10, ORE.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 356

BUY of the YEAR

in loading equipment



Rugged Box-Type Construction Permits Amazing Low Price

The KOLMAN "Junior" Conveyor is designed to meet the demand for a LOW COST portable conveyor rugged enough to support a Loading Trap and large Vibrating Screen. The "Junior" Model 202 will take the kind of punishment that is dished out to a portable outfit—and will cost you less money to own.

The rugged "box type" construction of the "Junior" gives you unusual strength and rigidity for such low prices. The sides are of fabricated 3/16" steel plate formed into a channel 16" deep with 2" legs. A steel belt cover completely covers the top, giving additional rigidity and completely encasing the return belt so as to prevent

material from working in to cause belt damage.

The under-slung power unit provides easy access for operation and servicing. Self-cleaning tail pulley, bar type head pulley, ball bearings throughout and heavy duty truck axles and tires are included to give it the biggest combination of fine features to be found anywhere in the low price field.

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 357

KOLMAN
'JUNIOR'
PORTABLE CONVEYOR

SEND for FREE literature

KOLMAN Manufacturing Co.
4922 W. 12th St., Sioux Falls, S. D.
Please send literature on
 101 Heavy Duty Conveyor
 202 Junior Conveyor
 Screens Feeders Traps
Quote size or capacity
Name _____
Address _____
City _____



A FORD TRACTOR WITH A FORD STEP-ON front-end loader removes snow from a road in Cadillac, Mich. The material bucket can handle 16 cubic feet of snow at each bite. Double-acting cylinders on the loader arms exert extra down pressure on the bucket for removing hard-packed snow. The same equipment is used other times during the year for loading operations in sand, gravel, and other materials. For more detail on the Ford tractor and loader write to the Tractor and Implement Division, Ford Motor Co., 2500 E. Maple Road, Birmingham, Mich., or use the Request Card at page 18. Circle No. 166.

Invulnerable to cuts and ruptures in the tread area!



U.S. ROYAL Super FLEETMASTER

You are looking at a new kind of on-and-off-the-road truck tire. It is so *immune* to road hazards it runs over razor-sharp axblades without losing a pound of air. It has the deepest tread U. S. Royal has ever built into this type of tire. It is so *versatile* it outperforms on any wheel—gives greater stability on front wheels, increased traction on drive wheels, extra recaps on trailing wheels.

For dump trucks, transit mixers, log haulers... on any rig exposed to heavy impacts, tire-killing terrain. You'll enjoy fewer tire failures, less downtime expense, greater service dependability.

In sizes through 11.00. See your U. S. Royal Dealer... or write Truck Tire Department. You can specify "Super Fleetmaster" on your new equipment.



United States Rubber

Rockefeller Center, New York 20, N. Y.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 358

Preheater goes to work in 20 seconds or less

■ An external, tank-type engine pre-heater that begins circulating coolant within 20 seconds is available from Phillips Mfg. Co., Inc. The Zero-Start is recommended for quick starts in low temperatures.

The unit incorporates an extruded, heavy-capacity element that provides



rapid warm-up and long life, the manufacturer states. It is installed in any liquid-cooled engine by a connection with the drain block. Because it quickly warms the engine coolant, it provides the engine cab with immediate warmth through the cab's heater.

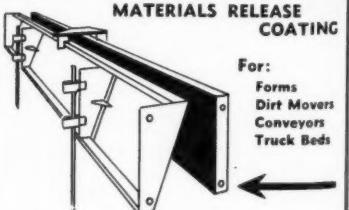
The Zero-Start engine heater operates off any 115-volt ac or dc current supply. It is available in two models, one for passenger-type vehicles and light trucks and one for larger rigs.

For further information about the heater write to Phillips Mfg. Co., Inc., 2816 Aldrich Ave. S., Minneapolis 8, Minn., or use the Request Card at page 18. Circle No. 170.

Got a sticking problem?

APPLY POWERFILM

MATERIALS RELEASE COATING



For:
Forms
Dirt Movers
Conveyors
Truck Beds

Wet concrete, clay, dirt, coal, lime — even snow — becomes "unstuck" when forms and equipment are coated with Powerfilm MRC.

Non-toxic, never gummy, it leaves no oil stain. Easy to spray, brush or wipe on, and as easily removed. Apply it to wet surfaces; Powerfilm chemically displaces water. Excellent as rust preventive.

Recommended particularly for concrete, paving, culvert and sewer pipe forms; inside dirt haulers and conveyor belting.

WRITE FOR DISTRIBUTOR'S NAME

The Thomas Co.

1645 Hennepin Ave., Minneapolis 3, Minn.

Phone: Federal 2-8275

BEST IN OIL!

For more facts, circle No. 359

CONTRACTORS AND ENGINEERS



Combination blade adds to truck's usefulness

A combination snowplow and backfill blade attachment that is controlled from the instrument panel greatly increases the usefulness of the International Model S-120 4x4 truck, according to the manufacturer. The double-duty blade can be used for road clearing in the winter or as a light-duty spreader or backfill blade the rest of the year.

The combination blade is hydraulically powered by means of a pump working off the truck engine through the fan belt. The S-120 gets extra traction for winter operation from its four-wheel drive.

For further information on International's Model S-120 truck and the combination blade attachment write to the International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card at page 18, Circle No. 169.

Brown & Blauvelt news

Brown & Blauvelt, New York, N. Y., engineering firm will supervise construction extending the Hejaz railroad 500 miles south from Ma'an Jordan, to Medina, Saudi Arabia.

Equipped with a combination blade attachment, International's Model S-120 4x4 truck is ready to handle snow-clearing operations in the winter.

AS THE WEATHER GETS COLDER AND MAINTENANCE activities pick up, the maintenance foreman of the General Sand & Stone Corp., Hartford, Conn., finds that one of the most frequent repair operations needed on his firm's fleet of cement mixers is the renewal of worn or stripped threads on cast-iron parts. The time spent on this operation is kept to a minimum through the use of Heli-Coil wire screw thread inserts. The steps involved in renewing the thread are (1) drilling the damaged hole, (2) retapping it to take the insert, and (3) turning in the insert. Often, the first step is unnecessary because the hole produced by the worn or stripped threads is approximately the same diameter as the drill size specified to take the tap for the insert. Here a Heli-Coil insert is being turned into a retapped stud hole on the ring gear of one of General Sand & Stone's 9-yard mixers. For more details on the wire screw thread inserts circle No. 172 on the Request Card at page 18, or write to the Heli-Coil Corp., 1496 Shelter Rock Lane, Danbury, Conn.



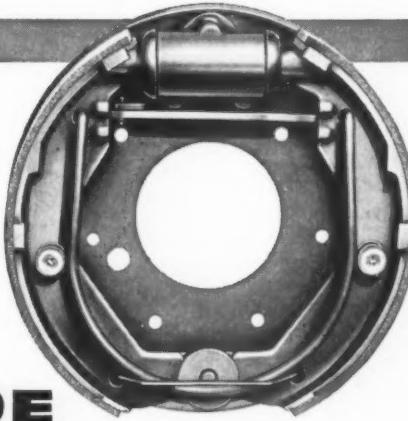
TDA® BRAKES

if it moves...we can stop it!

...for every industrial application where heavy duty braking is required!

FSH... FLOATING SHOE HYDRAULIC BRAKE

designed for close control with heavy loads



Unequalled stopping power and outstanding control are characteristic of the FSH. The brake shoes operate with a floating action. This permits the shoes to center themselves in the drum . . . eliminates the danger of liner loads concentrating at one point. The result of this even load distribution is a dependable, controllable brake . . . in either direction of travel.

The FSH now is available in a wide range of sizes for dependable control application on industrial, construction and materials handling equipment.

Other outstanding features offered by this new Timken-Detroit® FSH Brake are listed at the right:

Mechanical Parking Brake Hook-up. A separate parking brake is no longer necessary with FSH. If specified, the FSH Brake can be furnished with a mechanical parking brake linkage.

Long-life Lining. Brake lining is bonded to the shoe to give maximum lining area.

Positive Automatic Adjustment for special applications. One application of the foot pedal sets the automatic adjustment. No further adjustment of the brake is required during the full life of the brake lining.

Positive Contact Drum Seal. For applications where a sealed brake is required, the FSH incorporates a seal between the brake backing plate and brake drum.

©1956, R. S. & Company

DUDGEON HYDRAULIC JACKS

SALES RENTALS

CAPACITY TO 600 TONS

FOR:
PILE TESTING
UNDERPINNING
BRIDGES
PIPE PUSHING
SOIL TESTING

Write to Dept. M

DESIGNERS and MANUFACTURERS OF Hydraulic Units For Special Applications

RICHARD DUDGEON INC. EST. 1850

789 BERGEN STREET BROOKLYN, N. Y.
• ST 9-4040

For more facts, circle No. 360



TDA plants at: Detroit, Michigan • Oshkosh, Wisconsin • Utica, New York
Ashtabula, Kenton and Newark, Ohio • New Castle, Pennsylvania

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 361

Timken-Detroit Brake Division Rockwell Spring & Axle Company Dept. CAE-106, Ashtabula, Ohio
Please send me further information on your "FSH" brake.
Name _____
Company _____
Address _____
City _____ State _____



A 5-ton boulder shoots from the discharge end of the Wobbler feeder into a receiving truck at Montgomery Dam.

Huge feeder handles rock for Montgomery Dam project

A giant new feeder, the Wobbler, is processing an average of 250 2-ton cubic yards of rock per hour on the construction of Montgomery Dam, six miles south of the mining town of Alma, Colo. Originally designed for taconite mining, the feeder has re-

mained unaffected by the abrasive quality of the granite substances being moved.

Working in an area 10,700 feet above sea level, the Wobbler, a product of Universal Engineering Corp., Cedar Rapids, Iowa, is processing rock for a dam that will, on completion, be the highest in elevation in the United States. The \$2,300,000 facility is also the first rock-fill dam with a waterproof membrane of asphaltic concrete to be built in this country. A rock-fill base, free of sand, dirt, or other fines, constitutes the porous wall that is needed as a support base for a dam with an asphaltic-concrete membrane.

Had these fines been permitted to remain in the rock fill, they could have interfered with drainage and retained water, which could freeze in the winter and rupture the membrane.

Almost $\frac{3}{4}$ of a million cubic yards of carefully prepared stone is necessary for the support base. The rock fill is made of three layers—the core, containing rock ranging from 4 inches to 5 tons in size; a 10-foot layer of rock 3 inches to 5 tons in size; and the outside layer, next to the asphalt membrane, a 9-inch-thick layer of rock $\frac{3}{4}$ inch to 3 inches in size.

Ten per cent of fines is allowed in the core-fill part of the base, but there can be none in the 10-foot layer.

In processing the rock to remove

What makes this hauler a driver's dream?



It's the Allison FourSpeed TORQOMATIC DRIVE—a torque converter, transmission and retarder in one compact unit.

And this headline-making drive does more than fulfill a driver's dream as he puts this International Harvester 24-ton Model 95 Payhauler through its paces.

It speeds trips and job-cycle times. There's no break in the power flow as the driver flicks a lever to switch speed ranges with terrain changes. There's no clutch-pedal pushing, no gearshift-guesswork.

Allison TORQOMATIC DRIVE holds maintenance and repair

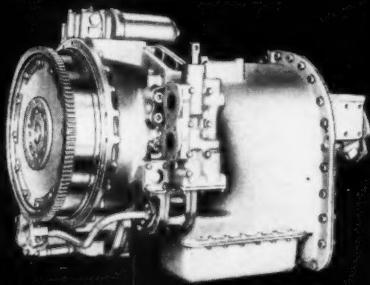
costs down to the minimum. The TORQOMATIC converter absorbs shock loads, prevents harmful engine lugging and stalling.

Another exclusive feature of this TORQOMATIC DRIVE greatly extends service-brake life, makes driving safer, too. It is the built-in hydraulic retarder which gives this hefty Payhauler a second braking system that saves regular service brakes for full stops or snubbing on curves.

Want to know more about this great new Allison Model CBT-5640 FourSpeed TORQOMATIC DRIVE? Write Allison Division of General Motors, Box 894C, Indianapolis 6, Indiana.



Allison FourSpeed Torqmatic Drive



Allison
TORQOMATIC DRIVES

For more facts, use Reader-Reply Card opposite page 18 and circle No. 363

KIESLER
Since 1892

CLAM SHELL BUCKETS



- More POWER, deeper digging with less effort, due to leverage
- Rugged Construction
- Full loading—Fast operating
- New, improved wobble-free Head Beam and one-piece shell construction

Write for bulletin 10822

JOS. F. KIESLER COMPANY
928-944 W. Huron Street
Dept. CE1, Chicago 22, Illinois

For more facts, circle No. 364
CONTRACTORS AND ENGINEERS

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Oversize moves across the Wobbler to be discharged into trucks which will haul to the dam site. The tumbling motion of the feeder has separated fines from this material.

fines, the Wobbler does not use the standard rotating cylinder, called a trommel screen. Instead, a set of bars in the bottom of the hopper rocks and tumbles the quarry material dumped on them by dump trucks and a Caterpillar tractor. Oval in cross section and set alternately vertical and horizontal, the bars maintain their same relative positions as they turn. This effects a churning motion that separates the fines, which fall through the bars and are carried away on a belt. The oversize, fed to the end of the Wobbler, is chuted down a 2,200-foot-long embankment straddling the Blue River Valley to the dam.

Material on the belt is carried to a shaker screen to be sifted through $\frac{1}{4}$ -inch slots. Approximately half of the fines are salvaged as $\frac{3}{4}$ material and are used in the rock fill, leaving a total waste from the quarry at about 7½ per cent.

Ken Willis, superintendent for Fisher Contracting Co., Phoenix, Ariz., contractor on the job, claims that the Wobbler has cut to one-sixth the time ordinarily required to complete a rock fill with specifications such as those for the Montgomery Dam.

When completed, the dam will provide the city of Colorado Springs with 18 million gallons of drinking water daily. The water will flow through a 75-mile-long, 30-inch-wide pipe from the Montgomery Dam reservoir.

THE END

New tarpaulin aluminum treated, fire resistant

A construction tarpaulin that is both aluminum-treated for ease of handling and for heat retention is announced by the H. Wenzel Tent & Duck Co. AlumiFlame, easy to handle even in sub-zero temperatures, is treated to make it fire-resistant, according to the manufacturer.

The new tarpaulin is also treated to make it water and rot-resistant. Like other Wenzel products, it features rope-in-hem construction for added strength.

For further information write to the H. Wenzel Tent & Duck Co., 1035 Paul St., St. Louis 4, Mo., or use the Request Card at page 18. Circle No. 174.

From Wednesday night to Labor Day 272,092 vehicles used the Ohio Turnpike. Tolls amounted to \$323,089.

For more facts, use coupon or circle No. 365—

Wire-rope slings

■ Acco cable-laid slings, a product of the Wire Rope Sling Division of American Chain & Cable Co., Inc., are pictured and described in a folder. According to the specification table, the diameters of the slings range from 9/32 to 2 inches. Other data in the table includes wire-rope construction, ton breaking strength, approximate foot-pound weight, and the pound-sling capacity of vertical, choker hitch, basket, and bridle slings.

To obtain Folder DH-532A write to Wire Rope Sling Division, American

Chain & Cable Co., Inc., E. Ross and Thomas, Wilkes-Barre, Pa., or use the card at page 18. Circle No. 94.

Slide rule shows weight of almost any shape item

■ A slide rule that will compute the weight of an object of practically any shape with known dimensions is available from American Pattern. The computer calculates for such materials as aluminum, cast iron, steel, brass, copper, and lead.

The weight of such shapes as rounds, squares, hexagons, fillets,

prisms, balls, hollow cylinders, wedges, cubes, cones, and irregulars, can be determined with the slide rule. It is designed for bench or desk use and is not pocket size.

The rule has an anodized aluminum face with black graduations. It can also be used in reverse to figure size restrictions when a proposed product must be kept within certain weight limits.

For further information write to American Pattern, 772 Bryant St., San Francisco 7, Calif., or use the Request Card at page 18. Circle No. 27.

New CAT* No. 9 Ripper FOR THE Mighty D9!

First choice for push-loading, the D9 is now more versatile than ever. The new No. 9 Ripper lets the D9 rip tough or frozen material between loading cycles. Faster, easier scraper-loading cuts time and costs.



TRACTOR-MOUNTED

The tractor-mounted No. 9 Ripper utilizes the weight of the D9 to force the teeth into hard material. No need for ballast or extra weights. The hydraulically operated ripper affords maximum maneuverability because it is tractor-mounted.

"LIVE DRIVE" HYDRAULIC PUMP

New No. 50 Hydraulic Control has a constant power pump that supplies the capacity to raise or lower ripper teeth independently of flywheel clutch or torque converter.

TWO RIPPING POSITIONS

Shanks may be pinned in either of two ripper positions which provide either maximum ground clearance when raised or maximum penetration (up to 28") when lowered.

TRIPLE TEETH

Use one, two or three. Any or all of them can be swung up and pinned out of the way. Teeth pivot 10° to either side. This permits tractor steering and smoother ripping through rocks. Shanks are heat-treated alloy steel, with hardened alloy cast steel boots. Points are hardened cast steel, pin-attached for easy replacement.

MANY OTHER IMPORTANT FEATURES!

Now the new No. 9 Ripper makes the "King of the Crawlers" an even more profitable and versatile machine. Mail the coupon for full details, or call your nearby Caterpillar Dealer. And remember, you can count on him for reliable service, and for parts you can trust.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

**MODERN HEAVY-DUTY
TRACTOR RIPERS**

MAIL TODAY!

Caterpillar Tractor Co., Dept. D-93, Peoria, Illinois
I would like more information on the new No. 9 Ripper
Name _____
Company _____
Address _____
City _____ Zone _____ State _____

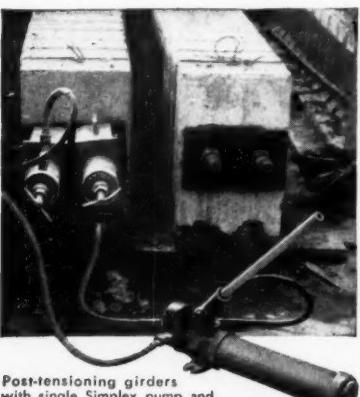
distributor

doings

Manitowoc names dealer for South Carolina

State Machinery & Supply Co., 1005 Meeting St., West Columbia, S. C., has been appointed exclusive distributor in the state of South Carolina of the line of shovels, cranes, and draglines manufactured by the Manitowoc Engineering Corp. The new dealer will also offer service facilities in addition to sales.

W. A. Kinard is president of the firm.



Post-tensioning girders with single Simplex pump and dual "Re-Mo-Trol" units.

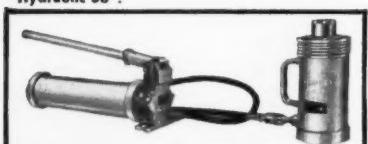
Simplex Hydraulic Pullers Provide Greater Efficiency in Concrete Prestressing Operations Construction Men Acclaim Ease and Safety of Simplex Methods

Concrete prestressing becomes a quick easy task with Simplex hydraulic equipment. Rods, wires and cables can be tensioned without torque, "off-center" pressures or complicated back-up devices because of the "center-hole" pulling feature of Simplex units. This accounts for a 75% increase in ease and efficiency.

The "Re-Mo-Trol" unit consists of a "center-hole" pulling ram connected to a hand, air, electric or gasoline powered hydraulic pump. The combination provides uniform stressing with maximum safety and speed. With the ram in place, the pump can be operated safely from any nearby location.

"Re-Mo-Trol" units are ideally suited for either job site or permanent prestressing bed use. Standard units are available from 10 to 100 ton capacities. They can be used directly on wires, rods or cables for high pressure tensioning, or for pushing or pulling against holding brackets in multiple bed stressing operations.

For detailed data on selection and application of Simplex equipment, write for Bulletin: "Hydraulic 56".



SIMPLEX "RE-MO-TROL" — Remote-Controlled Unit has ram connected to hydraulic pump by high pressure hose for safe, convenient use in tight spots and dangerous locations. The "JENNY" is a self-contained center-hole hydraulic puller which also serves as a press or heavy duty jack. It is available in capacities from 30 to 100 tons.

TEMPLETON, KENLY & CO.
2511 Gardner Road • Broadview, Illinois

For more facts, circle No. 366

H. O. Penn appoints four new officers

A New York, N. Y., distributor of earthmoving equipment and heavy construction machinery, the H. O. Penn Machinery Co., Inc., has appointed three new vice presidents and a new assistant treasurer.

Godfrey Berger is vice president of the Connecticut Division, with headquarters in Newington, Conn. Alexander La Panna is vice president of operations, and Russell E. Reed is vice president of sales. John Mancuso, who had formerly been cashier-credit manager, has been named assistant treasurer-credit manager.

Littleford names dealer

Deeds Equipment Co., Lawrence and Rochester, Ind., has been named an exclusive Indiana distributor of the complete line of heater-planers, distributors, tanks, kettles, and paver spreaders manufactured by Littleford Bros., Inc., Cincinnati, Ohio.

E. F. Craven news

The E. F. Craven Co., Greensboro, N. C., has discontinued its wholesale department and has terminated its distributor agreements with both General Motors Corp., Detroit, Mich., and the Wisconsin Motor Co., Mil-

waukee, Wis. The firm will still stock General Motors repair parts and Wisconsin air-cooled engines and repair parts but will not provide wholesale services to dealers.

The firm plans to concentrate on construction machinery and will handle such lines as Allis-Chalmers tractors, Bucyrus-Erie machines, and Rex pumps and mixers.

Cleveland Trencher names new Louisiana dealer

Southern Equipment & Tractor Co., with offices in Monroe, Baton Rouge, Shreveport, and New Orleans, La., has been appointed a distributor of trenchers and backfillers made by the Cleveland Trencher Co., Cleveland, Ohio. The firm will offer complete sales, service, and parts facilities for the entire state of Louisiana and the six extreme southern counties of Arkansas.

B-E names distributor

Llewellyn Machinery Corp., Miami, Florida, has been appointed a distributor of excavators and cranes, manufactured by the Bucyrus-Erie Co., South Milwaukee, Wis. Llewellyn's branch office in Tampa will distribute excavators, cranes, and dragline buckets. Both offices will serve the central section of the state.

Westinghouse Transit names new distributor

The Taylor Corp., 208 Weybosset St., Providence, R. I., has been appointed a distributor of the line of transit mixers manufactured by the Westinghouse Transit Mixer Division of LeTourneau-Westinghouse Co., Indianapolis, Ind. The new dealer will cover the states of Maine, New Hampshire, Vermont, Rhode Island, and all but four counties in Massachusetts.

B-L-H distributor

The construction equipment division of Baldwin-Lima-Hamilton Corp., Lima, Ohio, has appointed Stith Equipment Co. as a distributor

Longer
Work Time
Keeps Your
Profits...UP

with

S-N
REDUCTION
GEARS

POWER A DIESEL OR
GASOLINE INDUSTRIAL ENGINE
with S-N REDUCTION GEARS
and Power Cut-Off Clutch

Regardless of the type of heavy duty equipment you are powering . . . there's a S-N Model and gear ratio to do the job — faster, and more economically. Seven models available. Remember S-N Reduction Gear Units insure smooth, full power from engine to load with maximum economy. Ideal for original equipment and all types of engines from 40 H. P. to 750 H. P. giants. Reduction ratios start at 1.5:1 and step-up to 4:1 in standard ratios. New catalog sheets are available.



MIX ON-THE-JOB with the **WILLARD "TASK FORCE"**



WILLARD
Weigh-Batch Loader



WILLARD
Mixer Loading Conveyor



WILLARD Truck Mixer

GET MORE DONE with less expense with Willard portables like the typical company shown above. Their fast-operating spread consists of self-loading Weigh-Batcher, Mixer Loading Conveyor and two Truck Mixers . . . all bought for a fraction of the cost of a big stationary plant. Only two drivers, a batcher man and a dispatcher are needed.

You take Willards right to the project for maximum efficiency . . . using multiple stock piled aggregates and bulk cement for specification concrete. Moving to a new location requires no effort beyond digging a shallow pit for the foot of the conveyor. The "Willard Way" is the time-saving way!

"Wheel the right mix at the right time at the right cost to the right place with Willards."

WRITE FOR THE
"WILLARD WAY"
BOOKLET

Manufactured in Los Angeles, California and Galion, Ohio
WILLARD CONCRETE MACHINERY SALES COMPANY
11700 WRIGHT ROAD, LYNWOOD (LOS ANGELES COUNTY), CALIFORNIA

Member: T. M. M. R.

READY MIX "the Willard Way"

For more facts, use Reader-Reply Card opposite page 18 and circle No. 367



SNOW-NABSTEDT
Transmission Engineers

FOR HALF A CENTURY
INDUSTRIAL DIVISION
THE SNOW-NABSTEDT GEAR CORP., HAMDEN, CONN.
30 YEARS OF BETTER SERVICE

For more facts, circle No. 368

CONTRACTORS AND ENGINEERS

In northern Georgia, Stith, located at 966 Marietta St. N.W., Atlanta, Ga., will handle Lima shovels, cranes, draglines, and pull shovels.

Wooldridge names dealer for western Washington

The Hatten Machinery Co., 3433 Fourth Ave. S., Seattle, Wash., has been appointed an exclusive distributor of the line of scrapers manufactured by the Wooldridge Mfg. Div., Continental Copper & Steel Industries, Inc., Sunnyvale, Calif. The firm will offer complete sales, parts, shop, and field services in western Washington.

J. T. Hatten, president, and C. C. Pecnik, sales and service manager, head the firm.

Two new distributors to handle Euclid line

The Euclid Division of General Motors Corp., Cleveland, Ohio, has authorized two new dealers for the firm's complete line of scrapers, rear-dumps, bottom-dumps, and crawler tractors.

Anderson Equipment Co., Pittsburgh, Pa., will cover western Pennsylvania and four West Virginia counties. The state of Utah, southwestern Wyoming, and two counties in Nevada will be served by Archer Tractor & Machinery Co., 1118 S. Main St., Salt Lake City, Utah.

Brazos acquires Anderson

The contracting equipment assets of Anderson Bros. Corp., Houston, Texas, have been acquired by Brazos Equipment Rental Co., Houston, Texas. Brazos, as a result of the acquisition, now has available for rental almost every kind of equipment used in road-building, heavy construction, industrial-plant building, land clearing, water-line and sewer construction, oil and gas pipeline laying, and marine and industrial uses.

In addition to rentals, Brazos also offers equipment on purchase, rental-purchase, or trade basis. Paul E. McDaniel heads the firm, and Don E. Sharp is general manager.

General Road Machines appoints distributors

General Road Machines, Inc., Niles, Ohio, has appointed six new distributors to handle the firm's entire line of road paving equipment, including roadbuilding machines, forms, and hand tools, and to carry a complete stock of accessories and service parts.

Covering western Tennessee, northern Mississippi, and eastern Arkansas, is Hawkins Equipment Co., 1475 Thomas St., Memphis, Tenn. Central and southern Georgia will be handled by Sim Grady Machinery Co., 1382 Guy Paine Road, Macon, Ga. Ferguson & Blakemore Machinery Co. of 9025 G St., Oakland, Calif., will serve west-central California.

Sales in Missouri will be handled by Machinery & Supplies Co., Inc., 2000 Walnut St., Kansas City, Mo. The states of Maine, New Hampshire,

Vermont, and Rhode Island, and eastern Massachusetts will be serviced by Parker-Danner Co., 25 Factory St., Hyde Park Mass. The upper peninsula

of Michigan and Wisconsin will be covered by Hunter Tractor & Machinery Co. of 327 S. 16th St., Milwaukee, Wis.

The famed Appian Way may soon be retired after 2,268 years of service, because archeologists want to explore the secrets of its construction.

TORRINGTON CUSTOM-BUILT BEARINGS



South Park Avenue Bridge, Buffalo, N.Y.
Designed by A. Stuart Collins, A. J. Baynton & Co., Consulting Engineers

For Dependability and Economy in Bridge Applications!

Torrington Cylindrical Roller Bearings bring all that modern engineering can contribute to the highly specialized field of bridge bearings. Every feature has been proved by time-tested performance and economy in bridge applications over many years.

Consider these important operating advantages:

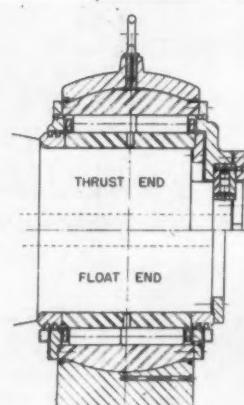
Lower initial cost—Anti-friction bearings minimize your power requirements. The initial cost of operating machinery is lower.

Lower operating costs—Reflected in lower power consumption because of lower coefficient of friction.

Dependability—Sealed pillow blocks guarantee freedom of operation under all weather and temperature conditions. Self-aligning feature counters any misalignment caused by deflection under load.

Lower maintenance costs—Anti-friction bearings need less attention—saves man-hours and lubrication costs.

Let a Torrington specialist show you how the operation of a movable span bridge can be improved with TORRINGTON Cylindrical or Spherical Roller Bearings. He has long experience in design and application, and a reputation known the world over.



THE TORRINGTON COMPANY

South Bend 21, Ind. • Torrington, Conn.

District Offices and Distributors in Principal Cities of United States and Canada

TORRINGTON BEARINGS

Spherical Roller • Tapered Roller • Cylindrical Roller • Needle • Ball • Needle Rollers

For more facts, use Reader-Reply Card opposite page 18 and circle No. 370

WINTER HEATERS CONSTRUCTION



- Salamanders
- Water Heaters
- Thawing Torches
- Steam Thawers
- Concrete Heaters
- Ground Thawers
- Steam Cleaners

Send for
Free Bulletins



For almost four decades, AEROIL WINTER CONSTRUCTION HEATERS have helped the contractor prevent costly delays, tie-ups and shut-downs. Now you can choose between kerosene burners with their 2000°F Flame, or Liquefied Petroleum Gas on most AEROIL EQUIPMENT. Write for FREE Bulletins on WINTER HEATING EQUIPMENT and also Asphalt Kettles, Tool Heaters, Cut-Back Sprayers and scores of other Contractors Needs. Write Dept. A.C.

Aeroil PRODUCTS CO., Inc.
Wesley St.
So. Hackensack, N.J.
4648 S. Western Av. Chicago 5,
3217 Union Pacific Av. Los Angeles 25.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 369

Manufacturer memos

Bullard starts plant; adds district managers

Work has started on the new plant for E. D. Bullard Co., in Sausalito, Calif., 12 miles from the firm's present site. Currently, the company is housed at three locations in San Francisco.

The expanding firm, which manufactures safety hats, has also added three men to its board of directors and appointed three district sales managers. Members of the board are James A. Folger, Alfred Ruggiero, and Carl Bromham.

The district managers include Herbert Raschke, who will work in the Midwest; Norris Seastrom, whose territory includes the Northwest and British Columbia; and Edward J. Illes, who will cover the Southwest.

Melton L. Bass elected president of Preload Co.

Melton L. Bass has been elected president of The Preload Co., Inc., New York, N. Y. An active director



The newly elected president of The Preload Co., Inc., Melton L. Bass.

of Preload for many years, Bass was president of the Byrne Organization of Washington, D. C., and more recently, the vice-president of the Raymond Concrete Pile Co. of New York. He has handled engineering and construction projects in the U. S. and abroad. Preload was recently acquired by the Holly Corp., New York, N. Y.

Lt. Gen. Eugene Reybold named Jay representative



Lt. Gen. Eugene Reybold (U. S. A. Ret.) new special representative of the Jay Corp.

Lt. Gen. Eugene Reybold, (U. S. A. Ret.) former executive vice president of the American Road Builders' Association, has joined the Jay Corp., Columbus, Ohio, as a special representative in Washington, D. C.

Gen. Reybold, Army Chief of Engineers during World War II, saw 38 years of active duty with the U. S. Army before becoming an ARBA official.

The Jay Corp., maker of earth tamping and asphalt cutting and tamping equipment, is a division of the J. Leukart Machine Co., Inc., Columbus.



Carl C. Clayton, left, is the new vice president, treasurer, and director of F. D. Cummer & Son. Joseph R. Black, right, is sales manager for the firm.

Cummer vice president, sales manager named

A new vice president and a new sales manager have been named by F. D. Cummer & Son Co., Cleveland, Ohio, maker of asphalt plants and equipment.

In the posts of vice president,

treasurer, and director is Carl C. Clayton, who was previously with The Wellman Engineering Co. Before that, he had been associated with the firm of Ernst & Ernst, Cleveland, Ohio.

Joseph R. Black, the new sales

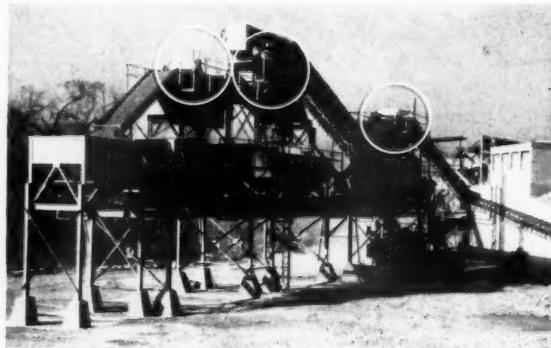
manager for the firm, has had a wide experience in sales and engineering, particularly as related to the design and construction of asphalt plants.

Reed Roller Bit names new Cleco vice president

The newly created position of vice president of the Cleco Air Tool Division of Reed Roller Bit Co., Houston, Texas, has been filled by the appointment of C. H. Elliott. Manager of the division since 1950, Elliott has also served as methods engineer and as chief industrial engineer with the firm.

YOU GET MOST ACCURACY on new Highway Program Jobs where

Above are shown 11 Cedarapids Horizontal Vibrating Screens on the screening plant of Concrete Materials Plant at Moline, Kansas. Concrete Materials has 16 of these screens in this one plant to maintain a 1000 TPH production rate.



Three Cedarapids 4' x 12' Horizontal Vibrating Screens handle 240 ton per hour output from a Double Impeller Impact Breaker, and produce six sizes of aggregate. The plant is owned by New Hope Crushed Gravel Co., New Hope, Pennsylvania.

67 Cedarapids Screens used on Kansas Turnpike

When aggregate contractors on the Kansas Turnpike were required to produce big tonnages of rigidly specified aggregates from poor material, they turned to Cedarapids Horizontal Vibrating Screens. A total of 67 of these screens were used in portable and stationary equipment to scalp fines, classify material and grade finished products. These screens assure owners of accuracy and maximum capacity since screen cloth openings are all in a horizontal position and at a right angle to the fall of material so that all material that should go through the screen goes through.

The Cedarapids Line of Equipment Includes:

PORTABLE AND STATIONARY CRUSHING, SCREENING AND WASHING PLANTS FOR STONE, GRAVEL AND SAND • BELT CONVEYORS • VIBRATOR AND REVOLVING SCREENS • FEEDERS • HAMMERMILLS • DOUBLE IMPELLER IMPACT BREAKERS • BATCH TYPE AND CONTINUOUS TYPE BITUMINOUS MIXING PLANTS • DRIERS • DUST COLLECTORS • VIBRATING SOIL COMPACTION UNITS • MOTORIZED HEAD PULLEYS

Built by Iowa . . . Sold the World Over



A. J. Belanger, left, and W. A. Rundquist, newly elected vice presidents of Pioneer Engineering Works.

Pioneer elects executives

Two new vice presidents have been elected by the Pioneer Engineering Works, Minneapolis, Minn., a subsidiary of Poor & Co. of Chicago, Ill. W.

A. Rundquist has been named vice president in charge of sales promotion, while A. J. Belanger will serve as vice president of sales.

Rundquist has been in charge of the firm's advertising and sales promotion since 1945. With the firm since 1940, Belanger had been sales manager.

LeTourneau representative

Albert E. Mansfield, Jr., has been made Midwestern representative for the Industrial Equipment Division of R. G. LeTourneau, Inc., maker of hoists and jib cranes.

Goodyear appoints three

Two new executive positions within the Goodyear Tire & Rubber Co., Akron, Ohio, have been filled with the appointment of O. E. Miles as sales manager of the tire division and R. W. Fitzgerald as general merchandising manager. Miles had formerly been general manager of the firm's retail-stores division, while Fitzgerald had been manager of tire sales.

L. W. Moore, manager of service sales and equipment, replaces Miles as general manager of the retail-stores division.

In his new post, Miles will coordi-

nate all field activities of the tire sales division. Fitzgerald will supervise all of the firm's merchandising departments.

American Hoist acquires Lebus Rotary Tool plant

The Longview, Texas, plant facilities of Lebus Rotary Tool Works, Inc., have been acquired by the American Hoist & Derrick Co. of St. Paul, Minn. The acquisition was an outright purchase of the complete plant, certain product inventory, major facilities, and a 20-acre site on the Texas & Pacific Railroad.

The Lebus line of drop-forged tools will be merchandised through the same distributors now handling the company's Crosby-Laughlin line. John McEvoy, formerly general manager of the firm's South Kearny, N. J., plant, will become manager of the Texas facility.

Iowa Mfg. appoints new sales representative

The appointment of Fred Dolton as district sales representative for the Cedarapids line of aggregate-producing and bituminous-mixing equipment has been announced by the Iowa Mfg. Co., Cedar Rapids, Iowa. He will cover the New England states and the metropolitan New York, N. Y., area.

Prior to his present appointment, Dolton had been associated with Hewitt-Robins, Inc., Stamford, Conn., as a project engineer in sales development.

Gar Wood names Davis general sales manager

The newly-created position of general sales manager of construction machinery for Gar Wood Industries, Inc., Wayne, Mich., has been filled by



David J. Davis, general manager of construction-machinery sales for Gar Wood Industries.

David J. Davis. The appointment was made as a result of the reorganization of the firm's construction machinery sales department and the transfer of tractor-equipment sales offices to Findlay, Ohio.

With Gar Wood since 1937, Davis will direct construction-machinery sales activities from headquarters in Findlay.

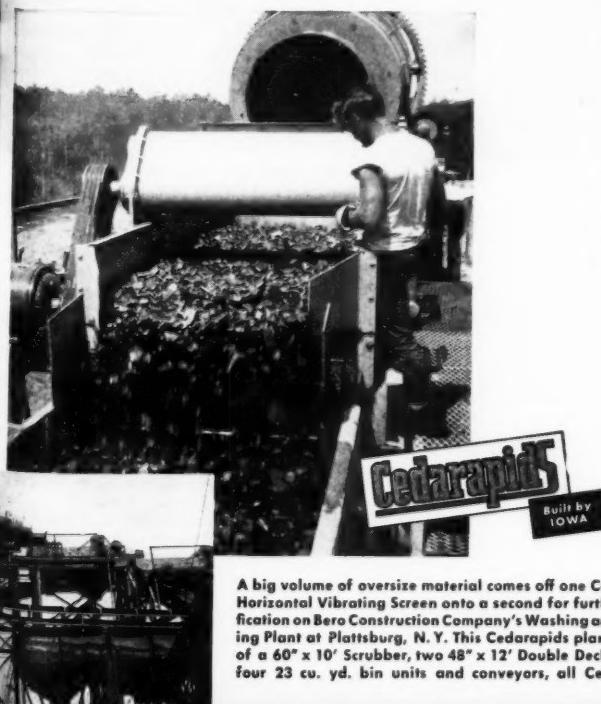
CMC appoints director of research department

James W. Maxwell has joined the Construction Machinery Co., Waterloo, Iowa, as manager of the firm's newly organized research and development department. He will be responsible for the operation of all phases of the company's research and for the development of new products allied to the present line of truck mixers, hoists, and pumps manufactured by CMC.

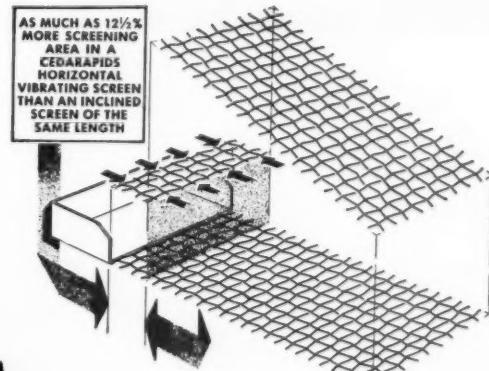
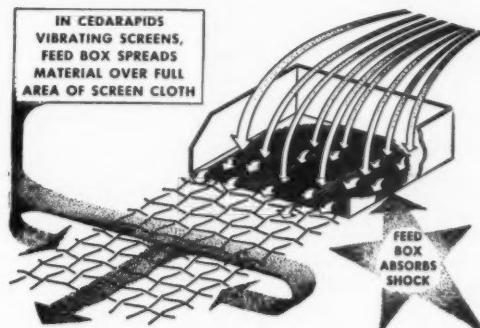
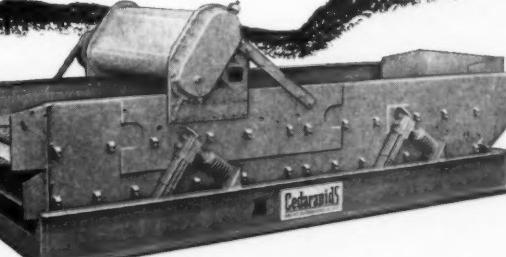
For more facts, circle No. 371

GRADATION FOR HIGH TYPE SPECS With Cedarapids Horizontal Vibrating Screens

Big volume production of aggregate that meets the high type specs of Turnpike and National Highway requires the best in screening equipment. You can be sure of having the best when you depend on Cedarapids Horizontal Vibrating Screens. They are designed to give you 20% to 30% more efficient gradation since the horizontal position of the screen and most vertical fall of material increases screening capacity because the full area of the screen cloth openings is available for material to pass through. Another advantage is that the horizontal position gives a more effective screening area than ordinary inclined screens of the same length. Flexibility of screen deck arrangements gives you accurate control over a variety of products. Your Cedarapids dealer can explain the many ways that these high production screens can be used in stationary or portable aggregate plants.



A big volume of oversize material comes off one Cedarapids Horizontal Vibrating Screen onto a second for further classification on Bero Construction Company's Washing and Screening Plant at Plattsburgh, N. Y. This Cedarapids plant consists of a 60' x 10' Scrubber, two 48" x 12' Double Deck Screens, four 23 cu. yd. bin units and conveyors, all Cedarapids.



IOWA MANUFACTURING COMPANY
Cedar Rapids, Iowa, U. S. A.

Theew elects treasurer

Waid V. Clark has been elected to the position of treasurer of the Theew Shovel Co., Lorain, Ohio, manufac-

turer of the Lorain line of power shovels and cranes. Clark will also retain his posts as secretary-controller and as a member of the board of directors.

Presenting another NEW WISCONSIN ENGINE

HEAVY-DUTY Air-Cooled ENGINE

the FULL-POWERED V-type 4-Cylinder 30 hp. model VH4

This rugged new engine has been added to the Wisconsin line to fill the horsepower gap between the Model VF4 25 hp. and the Model VG4D 36 hp. Wisconsin Engines. At the same time, the mounting base is dimensionally identical to the Models VE4 and VF4 to permit convenient replacement of the latter engines if greater power is required.

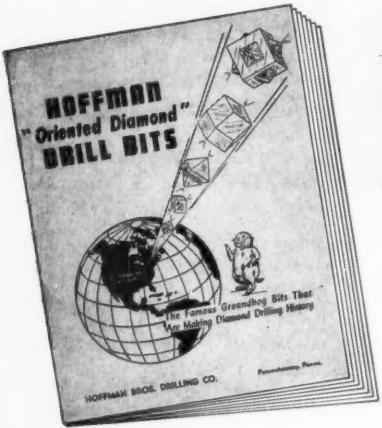
The Model VH4, which now makes its bow for the first time, is the most powerful engine of its type and size available today, in our estimation. It is an engine of basic High Torque design which gives it the important advantage of being able to deliver maximum usable Lugging Power that carries the load through the hard, heavy pulls. It has been designed to give you the best possible performance at all engine speeds from 1400 to 2800 rpm., even when operating under intermittent shock loads or under constant load, continuous service.

The Model VH4 is a heavy-duty engine in all respects, built for hard service under all operating conditions, at temperatures from sub-zero to 140° F. (60° C.). It is an exceptionally smooth-running, even-firing engine and has all the traditional heavy-duty features that characterize all Wisconsin Models, from 3 to 36 hp. It can be supplied as an "open engine" with side-mount fuel tank, or as housed power unit and may be equipped with electric generator and starter (or starter only), clutch, reduction or clutch-reduction assemblies . . . and is adaptable to operation on a variety of fuels such as gasoline, kerosene, natural gas, Butane, Propane or fuel oil of 35 Octane rating or better.

Learn more about this new engine. Write for Bulletin S-196 for detailed data and engineering specifications.



For more facts, use Reader-Reply Card opposite page 18 and circle No. 372



Find Out How HOFFMAN BITS Save You Money

Send for a copy of HOFFMAN'S new "Oriented Diamond" Drill Bit Catalogue



See how Hoffman Research is producing many other, almost unbelievable advancements in bit design like the Tapered "Step Core" and Miniature Bits shown here. The new Miniature Bits are reducing prospecting labor and costs because they operate from light, $\frac{1}{4}$ h.p. rigs. By combining drilling and reaming into one operation, the "Step Core" Bits penetrate faster—simplify core recovery—have high speed water release. Yes, it will pay you to find out why so many other drillers are getting better cores, lower footage costs and faster penetration with Hoffman "Oriented Diamond" Bits.

Hoffman Drilling Crews are also available for fast, efficient service on Contract Drilling Jobs.

HOFFMAN BROS. DRILLING CO.
BOX 426, PUNXSUTAWNEY, PA.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 373

Wire mesh increases traction of retreads

■ Installation of its wire in the retreading process will give a tire up to 40 per cent more traction than conventional retreads, according to the Harold E. Kimes Corp.

Kimes Tread Guard wire incorporates thousands of spring steel grippers which increase traction under all winter road conditions. As pressure is exerted on the tire, more and more of the grippers are exposed and come in contact with the roadway.

The wire also acts as a barrier to metal, glass, and other objects, thereby guarding against cuts and blowouts. It is available in truck and passenger-car sizes, varying in thickness between $\frac{3}{8}$ and 19/32 inch. The size of the wire is determined by the depth of the tread.

For further information write to the Harold E. Kimes Corp., 317 S. Madison St., Rockford, Ill., or use the Request Card at page 18. Circle No. 118.

Mack Trucks acquires Brockway facilities

The manufacturing, sales, and service facilities of Brockway Motor Co., Cortland, N. Y., have been acquired by the Mack Truck Co., Plainfield, N. J., under a special rental-purchase agreement.

The agreement calls for the outright purchase by Mack of Brockway's inventory. Manufacturing facilities at Cortland and Brockway-owned branches will be rented by Mack with an option to purchase.

The Brockway organization will be operated as a division of the Mack firm.

Steel guardrails

■ Concave and convex steel guardrails for highways, turnpikes, and bridges are detailed in a bulletin from Syro Steel Co. According to the bulletin, the rails are formed in 8-foot curved sections in 30, 60, or 90 degrees. Both rails are available in either high-rib or flat-rib design. The Protecto-rail posts are slot-punched and, as a cut-away view points out, they are available for single and double-face erection.

To obtain Bulletin No. 14-B-8 write to the Syro Steel Co., Girard, Ohio, or use the Request Card at page 18. Circle No. 103.

Armco builds new plant

Limited production of pipe piling will begin this month at the new \$800,000 plant constructed by the Armco Steel Corp. in Middletown, Ohio. The new facility is expected to increase the firm's production by more than one-third.

Containing 35,000 square feet of production space, the new building has a conventional structural-steel framework with siding and roofing of Armco Steelox panels formed with Armco galvanized sheets. The plant is expected to be completed this year.

Enamel, top-coat primer

■ An abrasion-resistant enamel and a rust-resistant top-coat primer, for use on all heavy equipment, are announced by the Robeson Preservo Co. The enamel is available in 14 high-gloss colors.

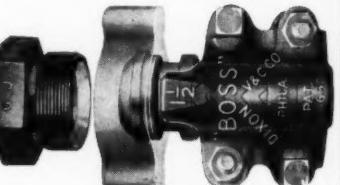
According to the manufacturer, the enamel can be applied either by brush or spray. It requires one coat of primer. The top-coat primer is fast drying and is sufficient by itself where rust prevention is all that is required.

For further information write to the Robeson Preservo Co., 160 Merchant St., Port Huron, Mich., or use the Request Card at page 18. Circle No. 118.

Safest Connections for Pile Driver Hose AND OTHER STEAM, AIR, WATER AND HYDRAULIC APPLICATIONS

"GJ-BOSS"

**GROUND-JOINT
FEMALE
COUPLING
STYLE X-34**



The original washerless coupling that is unequalled for safety in every high pressure service, and will therefore serve with exceptional efficiency and economy on all low-pressure applications. Built to withstand hard use and rough handling. Ground-joint union between stem and spud provides leak-proof, trouble-free seal... no lost or worn-out washers to replace. All parts malleable iron or steel, thoroughly rustproofed. Furnished with super-strong "Boss" Offset and Interlocking Clamps. Sizes $\frac{1}{4}$ " to 6", inclusive.

COMPANION MALE COUPLING "BOSS", STYLE MX-16

Companion coupling for "GJ-Boss", described above, and "Boss" Washer Type Couplings Style W-16. Will prove equally efficient and economical for all applications where standard iron pipe nipples are normally used. Each size fits same size hose . . . oversize hose not required. Coupling consists of I.P.T. male stem and "Boss" Offset and Interlocking Clamp. Steel or malleable iron, thoroughly rustproofed. Sizes $\frac{1}{4}$ " to 6", inclusive.

Stocked by Manufacturers and Distributors of Mechanical Rubber Goods

DIXON
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DIXON VALVE & COUPLING CO. LTD. TORONTO ASSOCIATE COMPANIES
Brockway Company Inc. Quakertown, Pa. • Precision Drawn Steel Company Canfield, N.Y.

For more facts, circle No. 374
CONTRACTORS AND ENGINEERS

Oil penetrates into microscopic spaces

A penetrating oil that is said to be able to penetrate openings as small as one-millionth of an inch is available in an aerosol spray can from Kano Laboratories. Called Aerokroil, the product is recommended for frozen as well as corroded connections.

The oil is also recommended for use in winter to lubricate pneumatic tools and for cleaning concrete mixing equipment. The manufacturer advises that spraying a bit of Aerokroil in the air stream of an operating compressor through the air intake opening will help keep the rings free and lubricate the upper cylinder.

Aerokroil will shoot a stream up to 3 feet, for reaching inaccessible places. The oil is also available for use in regular spray cans.

For further information write to Kano Laboratories, 1000 S. Thompson Lane, Nashville 11, Tenn., or use the Request Card at page 18. Circle No. 183.

Koehring names three district representatives

The Koehring Co. of Milwaukee, Wis., has named three district representatives. H. R. Powers will cover the states of Washington, Oregon, Idaho, and Montana. C. M. Andersen, the new Southwest representative, is handling Texas, New Mexico, Louisiana, Oklahoma, and Mexico. The territory of Illinois, Indiana, Kentucky, Tennessee, Missouri, and Mississippi will be handled by L. J. Meyers.

All three men will represent Koehring and two of its subsidiaries, the Parsons Co., Newton, Iowa, and the Kwik-Mix Co., Port Washington, Wis.

Euclid appoints five sales representatives

Five new district sales representatives have been appointed by the Euclid Division of General Motors Corp., Cleveland, Ohio. A territory including Colorado, Wyoming, Nebraska, Arizona, and western Texas has been assigned to Blane Currence. He will make his headquarters in Denver, Colo.

From headquarters in the Chicago, Ill., area, Donald Stone will cover Illinois, Wisconsin, eastern Missouri, eastern Iowa, and Lake County in Indiana. William H. Schwagmeyer, with headquarters in Atlanta, Ga., will handle the Florida, Georgia, and Alabama territory.

Eastern Tennessee and North and South Carolina comprise the territory of Mark Coons, who will make his headquarters in Charlotte, N. C. The New York-New Jersey area will be covered by Kenneth Underwood from his headquarters in New York City.

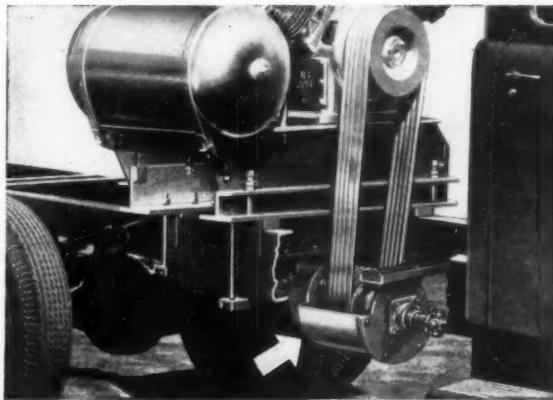
A list of coming conventions of interest to our readers appears on page 19 of this issue.

OCTOBER, 1956

AN ELECTRICALLY CONTROLLED 360-DEGREE swivel chute permits the Pettibone Mulliken Speedthrow to spot snow up to 150 feet in any direction, or to load directly into trucks. Clearing an 8-foot-wide path, the Speedthrow can be used to open a traffic lane in one pass. The self-contained unit is powered by a 100-hp Chrysler industrial engine. It can be adapted for use with tractor shovels, loaders, and trucks. A Fuller torque converter is coupled with the engine to deliver power to a 36-inch auger. According to the manufacturer, the rig is powerful enough to cut through closely packed snow as well as high drifts. For more information on the Speedthrow write to the Pettibone Mulliken Corp., 4700 W. Division St., Chicago 51, Ill., or use the Request Card at page 18. Circle No. 178.



Here's . . . more POWER to you with a **CEMCO Split-Shaft Power Take-off . . .**



The CEMCO Takeoff becomes a part of the truck drive shaft. Engineered for any truck, regardless of size.

The above illustration of a CEMCO Takeoff at work is only one of many applications where the truck motor also powers equipment mounted on the truck. The Takeoff rotates in same direction as drive shaft and at same speed, and, on a typical 2 to 2½-ton truck, delivers 65 to 75 B.H.P. at 1750 RPM. On a heavy-duty truck, at 1750 to 2000 RPM, the delivered B.H.P. will be from 150 to 200.

On the Mobile Machine Shop pictured below, the CEMCO Takeoff drives the combination 300-amp. welder and 15-KW (110-220 v.) generator with the truck's 1750 RPM.

Everything important to the job is at hand—truck, power, and equipment! Send for detailed information regarding your needs. Engineering help available for you, if needed.



This CEMCO Mobile Machine Shop—for maintaining heavy-duty construction equipment—makes over 2,000 tools available for on-the-spot servicing.

CEMCO

For more facts, circle No. 375

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INCORPORATED
GALION, OHIO

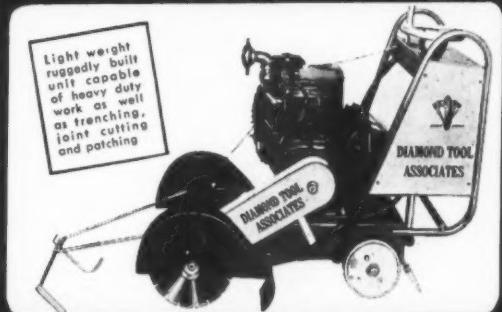
To do this **CUTTING JOB BETTER-**



You need this **CUTTING BLADE-**



And this **CUTTING MACHINE-**



and of course **DTA***
they're both **DTA***

- 6 BIG REASONS WHY DTA IS YOUR BEST BUY**
- Outstanding research and development.
 - Precise control of manufacturing process.
 - Highest quality diamond tools.
 - The best in metal bonding.
 - Top quality steel centers.
 - Complete sales and field service by experienced personnel selected for their knowledge of your cutting problems.

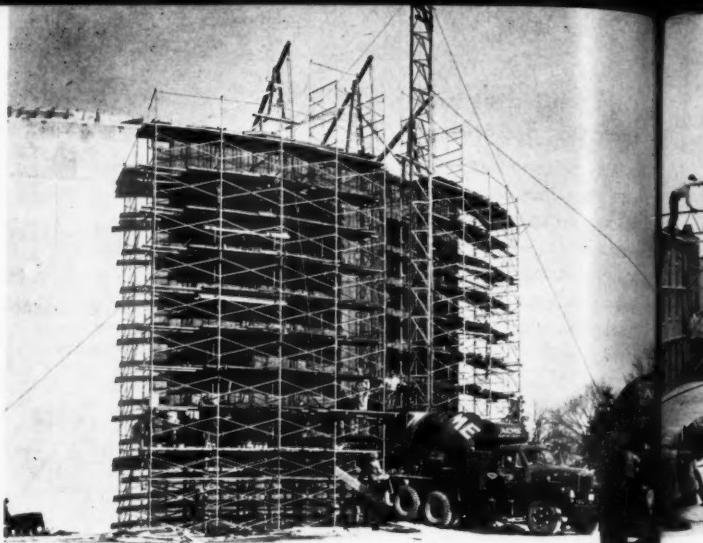
***DIAMOND TOOL ASSOCIATES**
P.O. Box 85 • 940 E. El Segundo Blvd. • Hawthorne, Calif.

For more facts, circle No. 376

Construction camera



One of three LeTourneau-Westinghouse Model C Tournapulls builds up a section of state highway that is being elevated to offset the possibility of flood when Greenlee Dam forms a reservoir north of Philadelphia, Pa. The three rigs move about 4,100 yards of fill daily on this 140,000-yard project.



Material and labor costs are reduced considerably on the 5 1/4 million gallon water-storage reservoir at Rockford, Ill., since all alignment and bracing lumber is placed only on one side. The contractor is using 8,400 square feet of Uni-form panels to build the 130-ft.-diam. x 50-ft. tank.

POWERS

Service-Master®

THE ALL-PURPOSE SERVICE BODY

ACCLAIMED BEST

BY CONSTRUCTION EQUIPMENT MEN

Sales records prove that Service-Master is used by more service men than any other body. Service-Master makes work easier . . . saves more time . . . builds greater profits!

EXTRA FEATURES!

"Freeze-free" hinges that can't bind • Concealed fenders to protect compartment walls • "Hi-Lo" floor for easier loading • "No-Bounce" bins to keep parts in place • "Puddle-Proof" cargo area . . . and many other "extras".

OUTLASTS SEVERAL CHASSIS

Carried in stock in all 48 states by LOCAL Distributors!

FIND OUT FOR YOURSELF Prove to yourself that Service-Master gives you more for your money. Mail this coupon for complete details and price information today.

MCCABE-POWERS AUTO BODY CO.
5000 N. BROADWAY • ST. LOUIS 15, MO.
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Please send me complete details on
SERVICE-MASTER

Name _____
Company _____
Address _____
City & State _____ DJO



For more facts, use coupon or circle No. 377



On the road and rolling!

NOW YOU CAN PLAN ON FULL COVERAGE OF THE ARBA ROAD SHOW AND AED CONVENTION IN CHICAGO THE WEEK OF JANUARY 27, 1957

ALL THE NEWS of both these big conventions will appear in the Road Show Daily, written and edited by the seasoned staff of Contractors and Engineers. These reports of each day's events and proceedings will be brought to all key people attending the meetings. Over 7,500 copies will be distributed each day.

ALL THE NOTES on things to come, convention schedules, meeting dates, and special events will be highlighted in each issue of the Road Show Daily. Readership will be high and interest intent for all these reports because those present will have to pick and choose between many demands upon their time.

ALL PRINCIPAL PLACES where conventioneers gather will be distribution points for the Road Show Daily—a selected list of downtown hotels and the International Amphitheater itself. The Daily will be published in two cycles of three issues each, with a 9 3/8" x 14" page rate of \$1,800 and a 7" x 10" rate of \$1,000 per cycle.

NEVER BEFORE has there been such an opportunity to tell your story and sell your product to so many people who are anxious to find out about new methods, materials, and machinery. Your ad in the Road Show Daily will cover the nation's largest, most important purchasers of construction products when they are psychologically ready to buy.

ROAD SHOW DAILY

For more facts, use Reader-Reply Card opposite page 18 and circle No. 378

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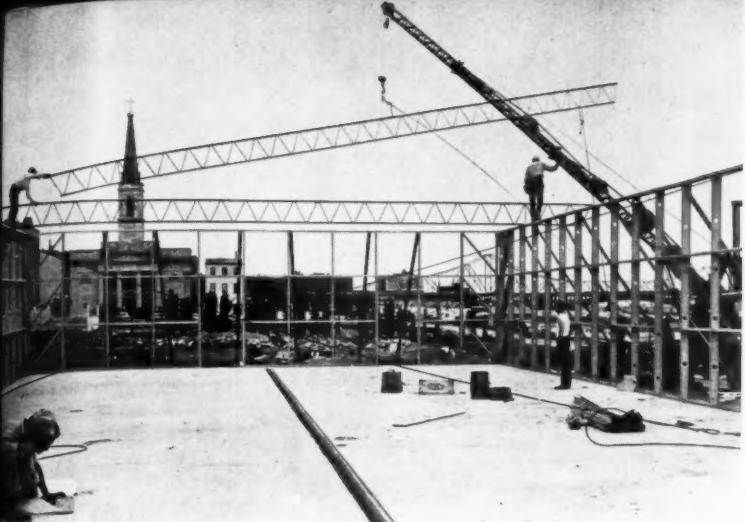
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OCTO



Prefabricated and all-bolted structures, easily dismantled for storage and re-use, are erected for the first annual Mid-America Jubilee in St. Louis, Mo. The 800-pound roof trusses 56 feet long, providing wide roof spans and cantilever overhangs for the buildings, were specially fabricated by Laclede Steel Co., St. Louis.

W. D. Craig made manager of Esso sales division

W. D. Craig has been made manager of the asphalt sales division of Esso Standard Oil Co., New York, N. Y., succeeding F. R. Field, who will serve as asphalt consultant until he retires. A. R. Curtis, who has been serving as administrative assistant in asphalt sales, has been appointed assistant division manager.

Craig joined Esso in 1927, and since then has been concerned with asphalt marketing, as Middle West representative, as New York and New England representative, and since 1946, as assistant manager of the asphalt sales division.

Forming equipment

The Symons Clamp and Mfg. Co.'s concrete-forming equipment is described in a catalog. Equipment pictured and detailed includes wood panels, high-strength panels with steel

cross members, form ties, column clamps, and shores. Data is given on the type form to use on high, curved, and battered walls. On-the-job photos, dimensional drawings, and specifications are included in the catalog.

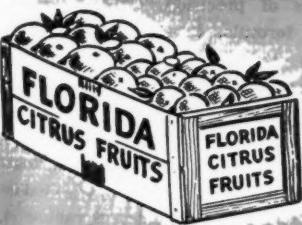
To obtain Catalog No. F-11 write to the Symons Clamp & Mfg. Co., 4249 Diversey Ave., Chicago 39, Ill., or use the Request Card at page 18. Circle No. 82.

H. K. Porter news

Allen M. Harrelson has been named vice president and treasurer of the H. K. Porter Co., Inc., New York, N. Y. He will have his office in the firm's Pittsburgh, Pa., headquarters. Before joining Porter, Harrelson was controller of Scaife & Cox, Pittsburgh.

Porter's Leschen Wire Rope Division, St. Louis, Mo., has appointed Maurice M. Muse district sales representative in the eastern two-thirds of Kentucky and Tennessee, and the northern half of Alabama.

*Delight your customers
Your business associates... at
Christmas*



Give Luscious Florida Oranges, Tangerines, Grapefruit

...for everyone in the family

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There's nothing more to do. We'll take care of everything. Select packages of one variety or assorted, as you prefer.

Full Box (Approx. 90 lbs.) \$10.75

Half Box (" 45 lbs.) 6.25

Full Bushel (" 55 lbs.) 7.25

Half Bushel (" 30 lbs.) 4.75

Discounts for quantity purchases — Satisfaction guaranteed on refund basis. Order with confidence. Now is the time to get started on your gift plans.

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Braun Fruit Packers, Dept. C.
De Land, Florida

Licensed & Bonded by Florida Citrus Commission

For more facts, use Reader-Reply Card opposite page 18 and circle No. 379

OCTOBER, 1956



Equipment encounters rough going in a rocky section during road-relocation work near Columbia, Tenn. This Euclid S-12 scraper, aided by a Caterpillar D8 tractor, takes on a load of material during grading operations. Pickle Construction Co., of Shelbyville, Tenn., is the contractor on the project.

Are You Looking for FASTER, BETTER, CHEAPER Methods?



When it comes to pipe lines for air, water, ventilating, dredging, hydraulicking or materials handling, Naylor Spiralweld pipe offers you a proved way to get these jobs done faster, more dependably and at lower cost.

The light weight of this distinctive pipe makes for faster, easier handling. Naylor's exclusive structure provides extra strength and safety for dependable performance no matter how rough the going. And, the one-piece Naylor Wedge-Lock coupling gives you the fastest method of connections to simplify installation and cut costs.

If you are looking for ways to speed up pipe line operations in construction service, get the facts on Naylor pipe and Wedge-Lock couplings today.

Ask for Bulletin No. 507.

NAYLOR

PIPE



NAYLOR PIPE COMPANY

1270 East 92nd Street
Chicago 19, Illinois

Eastern U. S. and Foreign Sales Office: 350 Madison Avenue, New York 17, New York

For more facts, use Reader-Reply Card opposite page 18 and circle No. 380

145



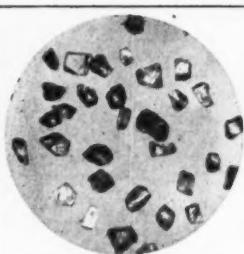
Fill for Route 71 near Kansas City, Kans., will be retained along the main track of the Burlington Railroad by this metal bin wall, which is being installed at the rate of 250 feet daily. The Armco wall, ranging from 5 to 18 feet in height, is 5,200 feet long.



The usual crowd of sidewalk superintendents watch as L. B. Foster steel sheet piling is driven 30 feet to a hardpan strata for a test pit that will help engineers plan foundation work for Chase Manhattan Bank's new office in New York City.

CHUNKY DIAMOND PARTICLES

Important to Diamond Blade Life



Here's what a good, hard-working diamond particle looks like...the kind you consistently find in every Felker Segmented Wheel.



Long, skinny splinters can't withstand heavy impact loads. Loss of cutting speed and blade efficiency are the natural outcome.

Another reason for Felker Segmented Blade leadership in concrete cutting

At Felker Manufacturing Company we go to a lot of effort to make the best diamond wheels you can buy. A most important step in blade manufacture is reduction of the diamonds to correct particle size. Simply shattering the diamonds isn't enough...this produces a variety of particle shapes which is disadvantageous. Longest life and most work result when the tiny diamonds are compact in shape, of nearly uniform length, breadth and thickness. This structure increases strength, resists fracturing and minimizes loss of diamonds when wheel is in use. These particular diamond shapes also possess a myriad of sharp cutting edges which increase cutting speed of the blade.

By developing special crushing and separating techniques at Felker Manufacturing Company, the weaker diamond splinters, flakes and useless "fines" are eliminated. Only carefully graded, properly shaped diamond particles ever go into Felker Segmented Blades—another insurance of top quality performance on every concrete cutting job!



FELKER MANUFACTURING CO.
TORRANCE, CALIFORNIA

World's largest and oldest manufacturer of
diamond abrasive cut-off wheels and machines.

For more facts, circle No. 381

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Ideal for—Offices • Drafting Rooms • Paymasters • Timekeepers • Engineers and many other uses conforming to the contractors' particular needs.

Mobile Offices come equipped with drafting tables, desks, lavatory, air conditioning (optional), heater, etc., and can be equipped to your specifications. Units are built for rugged use. Many of these units are being used by leading contractors throughout the U. S.

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Eliminate dirt — soot — noxious fumes forever with instant lighting LP Gas heat. Eliminate handling of flammable liquids on the job!

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Send facts on Insto-Hot Salamanders and Infra-Red Heaters.

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For more facts, use coupon or circle No. 383

Tank insulation adds to efficiency, economy

The use of Thermo-Panel insulation can reduce heat loss 90 to 95 per cent, according to the manufacturer, the Cutler Engineering Co. The insulation is recommended for all types of heated tanks, towers, and pressure vessels. Flexible and light in weight, the insulation fits any size or shape structure.

The Cutler Thermo-Panel is 24 x 42 inches in size with an outer shell of heavy-gage aluminum or galvanized steel. A low-density, 3-inch glass fiber pad of high insulation value is fastened to the panel. The serrated, top edge of the panel and one long side are welded to the tank. The other two sides are fastened to adjacent panels with sheet metal screws.

For further information write to the national distributor, Asphalt Equipment Co., Inc., P. O. Box 2498, Fort Wayne, Ind., or use the Request Card at page 18. Circle No. 186.

Roller bearings

Precision maximum-type cylindrical-roller bearings are covered in a catalog from Rollway Bearing Co., Inc. Topics covered are selection of bearings, maximum operating speeds, radial internal clearance, and the degrees of precision. Charts, graphs, and formulas illustrate the basis of load rating, and the various capacities of loads. Conversion tables, estimated bearing weights, and tolerance charts conclude the catalog.

To obtain Catalog PR-456-DC write to Rollway Bearing Co., Inc., Geddes and Seymour Streets, Syracuse 4, N. Y., or use the Request Card at page 18. Circle No. 77.

Garrett Corp. news

The Northill Co., Los Angeles, Calif., a wholly-owned subsidiary of the Garrett Corp., also of Los Angeles, has merged with Garrett's Air Cruisers division in Belmar, N. J.

The Northill lightweight anchor and Air-Lung will continue to be sold and identified under the Northill trademark, but will be produced by the Air Cruisers division, manufacturer of survival equipment.



CRANES TEAM UP for trenching work required during construction of a 1,140-foot runway extension and taxiway at Mitchell Field Air Base, N. Y. The 25-ton Lorain Moto-Crane sets timbers for the trench, and also uses the Erie 3/4-yard clamshell, foreground, for excavation, while the Lorain 50, background, digs ahead.



HEAVY BRUSH AT THE SITE of the 1,850-foot-long Palo Verde diversion dam and levee system on the Colorado River near Blythe, Calif., is stripped by a Caterpillar D8. Three Cats did the 4,000-yard stripping job, which, together with 28 miles of land clearing, was subcontracted to Milt Wilson, Parker, Ariz.

GMC division continues mechanic training courses

The General Motors Corp.'s maintenance and servicing program being offered throughout the country has turned out a total of 8,000 skilled truck maintenance specialists since its inception three years ago. The number is expected to increase continually, according to GMC Truck and Coach officials, who expect more and more GMC truck users to take advantage of the program.

Courses, depending on subject matter, last from one day to two weeks, and they include studies of diesel tune-up, truck Hydra-Matic, carburetion, diesel overhaul, Twin Hydra-Matic, rear axles, standard transmissions, and V-8 engine tune up.

The courses are being held periodically and are not controlled by rigid schedules. There is no tuition charge; the only cost involved for GMC truck owners is for the subsistence of employees taking the courses. The courses are held in 30 centers located in key cities in 23 states and the District of Columbia.

New TELESCOPING VIBRATORY SCREED



BUILT ESPECIALLY for

Overpass and Bridge Roadways

Tilt-Up Slabs and Industrial Floors

LENGTH ADJUSTMENT

- MODEL 302
From 15'-6" to 36'-0"
- MODEL 304
From 10'-2" to 25'-0"

HEIGHT ADJUSTMENT

- From $\frac{1}{2}$ " below to $\frac{1}{4}$ " above top of forms

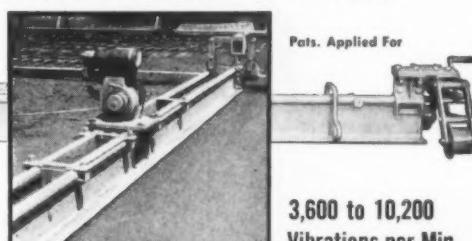
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Heavy-Duty Power Buggies

Pats. Applied For

INTRODUCING...

The New RYAN, Jr. Sod Cutter

Cuts up to 75 Sq. Ft. of Perfect Sod Per Minute

COMPACT
PERFECTLY BALANCED

LIGHT-WEIGHT
EASY HANDLING

See it at Your Ryan Distributor or write us for full information.



Here is a rugged, dependable sod cutter at a budget price. Easily transported from place to place. It is the ideal tool for sod cutting jobs where a larger machine is not practical.

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Ryan landscaping equipment company
Division of KIM Machine Works, Inc.

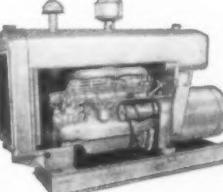
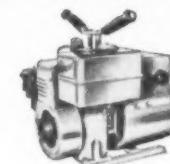
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Portable power to speed your Jobs, cut costs!

UNIVERSAL LIGHTWEIGHT, HEAVY-DUTY ELECTRIC POWER AND LIGHT PLANTS

GASOLINE OR DIESEL models give you low-cost, instant power and light anywhere on the job . . . any place you go. End work delays, step up production. Hand carried, dolly mounted plus water cooled series up to 35 kw., gasoline and diesel . . . the industry's newest!

PRICED LOW—now see how little dependable Universal Electric Power and Light Plants cost. Mail coupon.



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Send full details, prices on Universal Electric Power and Light Plants for construction work.

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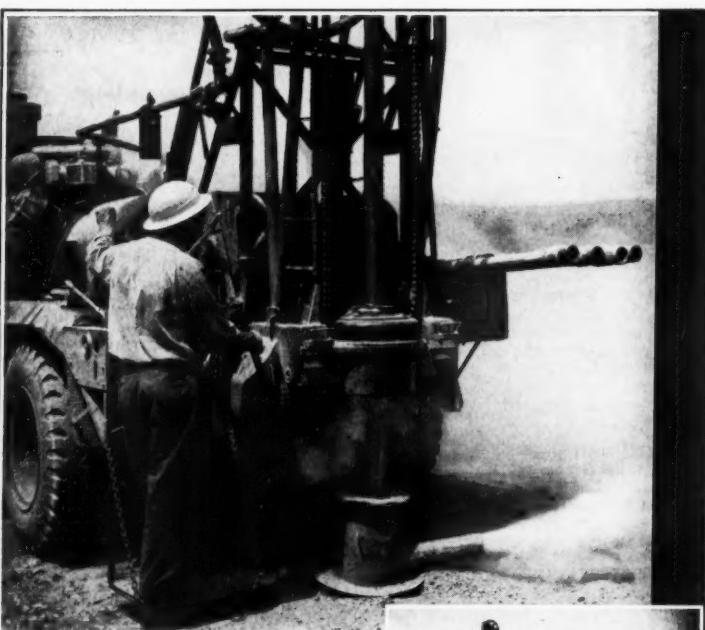
For more facts, use coupon or circle No. 385



COMPACTION of an asphaltic-concrete approach for a relocated section of U. S. 15 between Camp Hill, Pa., and the Gettysburg interchange of the Pennsylvania Turnpike is done by a Buffalo-Springfield 12-ton three-wheel roller. Hempt Bros., Camp Hill, Pa., was the contractor.



UNLOADING OF STEEL from railroad cars for the Delaware River Bridge, linking the Pennsylvania and New Jersey Turnpikes, is done by an Insley WB crane. Adel, Inc., Pennel, Pa., has the crane mounted on a Dart truck, which is equipped with a Waukesha gasoline engine.



Davey Rotary Drill on James E. Hoffman job near Karthaus, Pa.

**cut drilling costs
on every
construction job!**

DAVEY Rotary Drills



On every big construction job, you can speed drilling . . . cut the costs of blast holes, structure testing, core drilling—with Davey's!

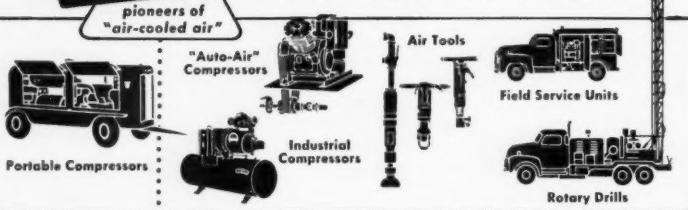
Davey Rotary Drills are suitable for mounting on any truck . . . move fast between jobs . . . are easy to set in drilling position. They are available in 6 different models—air blast, mud pump, or combination types. Rated capacities to 2,000 ft. Features include choice of power take-off or separate power unit operation, automatic hydraulic feed, hydraulic pull down, heavy-duty rotary table, rugged tubular box-type mast.

AA-1700

Write for full details!

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DAVEY COMPRESSOR CO. • KENT, OHIO



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Increasing tool value

■ A service offered by Ramset Fastening System is said to increase the value of Ramset powder-actuated tools for the user. The first group in a series of diagrams, which are available without charge, show the tool used in wood and steel roof decking, steel deck plates, and stand-off hangers. The diagram pages are designed for loose-leaf filing.

To obtain the literature write to the

Ramset Fastening System, Winches-
ter-Western Division, Olin Mathieson
Chemical Corp., 12117 Berea Road,
Cleveland, Ohio, or use the Request
Card at page 18. Circle No. 80.

United Steel promotion

Charles C. Hall has been made gen-
eral sales manager for United Steel
Fabricators, Inc., Wooster, Ohio. He
was formerly sales manager of the
highway products division.

"Tb' seasons come 'n go
but McKISSICK goes on—
forever tb' best."

McKISSICK
CONSTRUCTION
BLOCKS
For Consistent Performance

All steel construction,
heavy steel plates and
bars, steel sheaves, cold
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Machine grooved to prop-
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nished for any size wire
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Extra large center pins,
drilled and countersunk
for Alemite lubrication.

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McKISSICK PRODUCTS CORPORATION
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ALL THE EXCAVATION for a curbing job in Houston, Texas, is done by an International Drott TD-6 Skid Shovel equipped with an Ottawa backhoe. The backhoe is used for trench excavation here. The rig also handles concrete pipe sections and uses the dozer to move away excess dirt.



ROCK AND GRAVEL for a major road project near Salem, Oreg., is fed to a shop-built portable crusher by a Bucyrus-Erie 22-B dragline with 3/4-yard bucket. J. R. Taggart, Salem, is doing the job, about 7 miles east of Albany, under a contract with the Oregon State Highway Commission.

Rear-end collisions prove big hazard on expressways

Rear-end collisions are the greatest hazard on modern expressways, Charles W. Prisk, research engineer of the U. S. Bureau of Public Roads, told those attending the convention of the Institute of Traffic Engineers last month.

It was agreed that the best way to prevent rear-end crashes was to keep every vehicle moving at the same speed, but achieving that goal would be difficult. One method suggested

was to cut down speeders and step up crawlers; and to provide better speed and position cues for the driver.

Mr. Prisk noted that limited-access expressways proved 250 per cent safer than conventional highways. A study by the BPR showed that roads with access control averaged 2.8 fatalities for each 100-million vehicle miles, as compared to eight fatalities for those with unlimited entrances and exits.

Added dependability for materials handling equipment . . . Made-to-order **BHEW HYDRAULIC CYLINDERS**

BHEW custom-built hydraulic cylinders give dependable operational performance wherever they are used. These efficient, close-tolerance cylinders require minimum mounting space; their cost is reasonable; there is no charge for tooling. **BHEW** builds cylinders to your specifications, delivers them on schedule.

BHEW CYLINDER FEATURES:

Standard and special designs available. • Double or single acting and telescopic. • 1 1/2" to 8" bore. • Strokes up to 156". • Smallest possible O. D. and retracted O. A. length. • Oil cylinders with 1,500 psi or 3,000 psi working pressure, pneumatic up to 150 psi. • Cup-type, ring-type or O-ring construction. • Choice of mounting.



1. Honed steel cylinder.
2. Full double-sealing "U" cup packing.

Furnished in a wide variety of mountings and anchor brackets.

Our engineers will be happy to work with you on any cylinder problems you may have. Without charge, of course.

Send us specifications of your requirements, for full information.

GASOLINE AND LPG ENGINES

Model	Cyl.	Bore	Stroke	Disp.	Barrel Engine H.P.
N56	4	2 1/4	3 1/2	56	14.4 @ 2200 RPM
N62	4	2 1/4	3 1/2	62	15.3 @ 2200 RPM
Y69	4	2 1/2	3 1/2	69	21.4 @ 2400 RPM
Y91	4	2 1/2	3 1/2	91	28.5 @ 2400 RPM
Y112	4	3 1/4	3 1/2	112	32.0 @ 2400 RPM
F124	4	3	4 1/2	124	36.5 @ 2400 RPM
F140	4	3 1/4	4 1/2	140	42.0 @ 2400 RPM
F162	4	3 1/4	4 1/2	162	49.0 @ 2400 RPM
F186	6	3	4 1/2	186	60.5 @ 2400 RPM
F209	6	3 1/4	4 1/2	209	68.0 @ 2400 RPM
F226	6	3 1/4	4 1/2	226	73.0 @ 2400 RPM
F244	6	3 1/4	4 1/2	244	79.0 @ 2400 RPM
M271	6	3 1/4	4 1/2	271	86.2 @ 2400 RPM
M290	6	3 1/4	4 1/2	290	92.2 @ 2400 RPM
M330	6	4	4 1/2	330	104.4 @ 2400 RPM
M363	6	4	4 1/2	363	128.5 @ 2800 RPM
B371	6	4 1/2	4 1/2	371	110.0 @ 2400 RPM
B427	6	4 1/2	4 1/2	427	121.0 @ 2400 RPM
G134	4	3 1/4	4 1/2	134	42.0 @ 2400 RPM
G157	4	3 1/4	4 1/2	157	40.0 @ 2000 RPM
E201	4	3 1/4	4 1/2	201	65.4 @ 2400 RPM
H227	4	3 1/4	5 1/2	227	54.0 @ 1800 RPM
H243	4	3 1/4	5 1/2	243	57.9 @ 1800 RPM
H260	4	3 1/4	5 1/2	260	62.0 @ 1800 RPM
H277	4	3 1/4	5 1/2	277	66.4 @ 1800 RPM
K363	6	4	4 1/2	363	123.0 @ 2400 RPM
J382	6	4 1/2	4 1/2	382	74.0 @ 1400 RPM
T371	6	4 1/2	4 1/2	371	119.0 @ 2400 RPM
T427	6	4 1/2	4 1/2	427	140.0 @ 2400 RPM
U501	6	4 1/2	5 1/2	501	159.0 @ 2400 RPM
R513	6	4 1/2	5 1/2	513	164.3 @ 2400 RPM
R572	6	4 1/2	5 1/2	572	182.4 @ 2400 RPM
R602	6	4 1/2	5 1/2	602	191.7 @ 2400 RPM
V603	8	4 1/2	4 1/2	603	220.0 @ 2800 RPM
S749	6	5 1/2	5 1/2	749	217.0 @ 2200 RPM
S820	6	5 1/2	5 1/2	820	237.0 @ 2200 RPM

CUSHIONED POWER DIESEL ENGINES

Model	Cyl.	Bore	Stroke	Disp.	Barrel Engine H.P.
ZD129	4	3 1/4	3 1/2	129	34.0 @ 2000 RPM
GD157	4	3 1/4	4 1/2	157	45.0 @ 2000 RPM
*ED201	4	3 1/4	4 1/2	201	45.8 @ 2000 RPM
HD243	4	3 1/4	5 1/2	243	55.0 @ 2000 RPM
*HD260	4	3 1/4	5 1/2	260	59.0 @ 2000 RPM
*HD277	4	4	5 1/2	277	63.2 @ 2200 RPM
*JD382	4	4 1/2	6	382	72.5 @ 1600 RPM
TD427	6	4 1/2	4 1/2	427	106.0 @ 2000 RPM
RD572	6	4 1/2	5 1/2	572	154.0 @ 2000 RPM
VD603	8	4 1/2	4 1/2	603	175.0 @ 2600 RPM
SD802	6	5 1/2	5 1/2	802	202.0 @ 1800 RPM

*Available for industrial applications only.



INGERSOLL-RAND GYRO-FLO 105 COMPRESSOR POWERED BY CONTINENTAL RED SEAL, SUPPLYING AIR FOR PAVING BREAKER CUTTING OFF CONCRETE PILING

Year after year, ever since 1902, Continental engines have been proving their dependability in a steadily-lengthening list of special-purpose machines. Today, no matter what the exact requirement of the job, there's a Red Seal model—gasoline, Diesel, or LPG—engineered and built to meet it down to the last detail—a model with the proper performance characteristics, profile, shape and weight. In the industrial line there are models at closely-spaced levels—from 14 to 240 horsepower. You find Red Seals in many types of construction and industrial equipment, in farm machines of all descriptions, and in transportation, speeding the job and proving their inbuilt qualities of performance, economy and long life.

SERVICE AND GENUINE RED SEAL PARTS
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6210 CEDAR SPRINGS ROAD, DALLAS 9, TEXAS • 1252 OAKLEIGH DRIVE, EAST POINT (ATLANTA) GA.

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BHEW

BENTON HARBOR ENGINEERING WORKS, INC.
622 LANGLEY AVENUE • ST. JOSEPH, MICHIGAN

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OCTOBER, 1956

149



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Easily Installed Easily Removed

Ready Made for
Your Make and
Model Tractor

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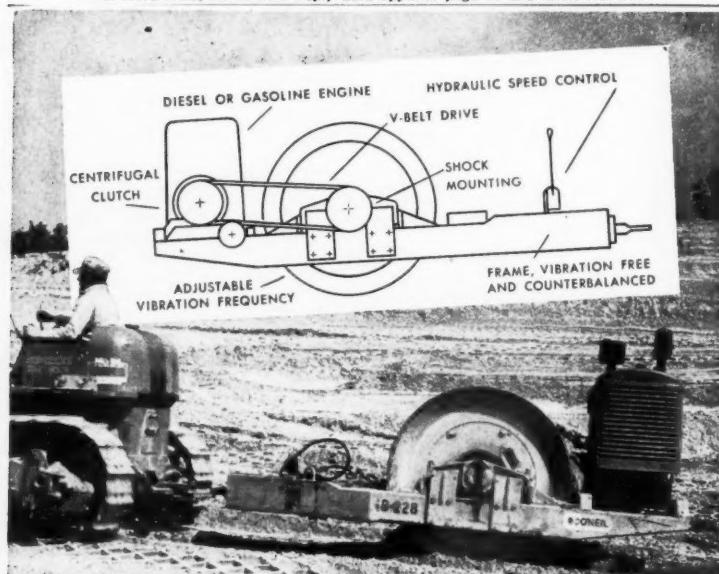
INDUSTRIAL CAB COMPANY

36 Jefferson Avenue

PHONE 3959

Salem, Mass.

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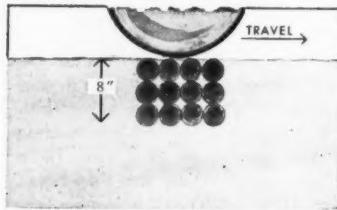
NEW CONCEPT IN COMPACTION!

VIBRO-PLUS

TERRAPAC

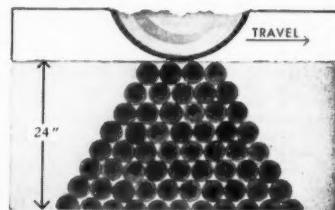
VIBRATORY ROLLER

"Terrapac" compacts faster, better and deeper in fewer passes than ordinary 30-50 ton rollers yet weighs only 3½ tons. Saves hours of valuable time because maximum density can usually be achieved in only 2 passes . . . Light enough to be easily handled on any fill or for quick transport . . . Also useful as a static roller if desired.



CONVENTIONAL
STATIC COMPACTION

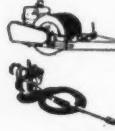
Rollers relying on weight alone produce friction forces between individual soil particles that prevent densification at any great depth.



TERRAPAC
DYNAMIC COMPACTION

Vibratory forces, transmitted to soil in all directions, reduces friction — facilitates relocation of particles at far greater depths.

An actual field test under State Highway supervision showed that a specified 100% standard proctor density could be obtained at a 24" depth after 2 passes with a "Terrapac". . . A 15 ton smooth roller required 20 passes to obtain specified density at only an 8" depth!

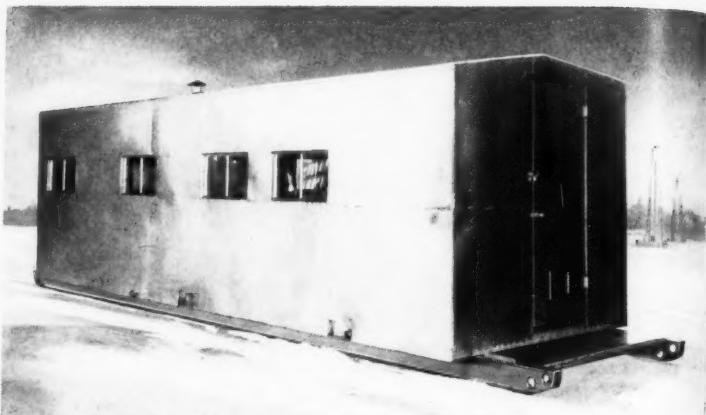


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STANHOPE, NEW JERSEY No. 41-6

For more facts, use Reader-Reply Card opposite page 18 and circle No. 391



ICE AND SNOW ARE NO PROBLEM to the construction operations of the Shell Oil Co. of Utah, as far as field headquarters are concerned, thanks to skid-mounted offices like this. Built by the Fruehauf Trailer Co., the trailer contains a kitchen, a bath, and two bunks in addition to the office space. It can be tractor-towed over ice and snow or picked up with an A frame and set on a flat-bed trailer for over-the-highway transport. For more details on the skid-mounted field offices circle No. 190 on the Request Card at page 18, or write to the Fruehauf Trailer Co., 10928 Harper Ave., Detroit 32, Mich.

CIB officers

At the annual meeting last month of the Concrete Industry Board of metropolitan New York City, the following officers were elected for the ensuing year:

President, Webster J. Caye, Jr., Caye Construction Co., Inc., Brooklyn; vice president, George Pavarini,

Pavarini Construction Co., Manhattan; secretary, William J. McIntosh, Portland Cement Association; treasurer, Dugald J. Cameron, Concrete Reinforcing Steel Institute.

At the luncheon that followed the meeting, Joseph B. Diamond, a CIB member, spoke on "Some Legal Aspects of Construction". Mr. Diamond is both a civil engineer and a lawyer.

VIBRIDGE

THE LOW COST BEARING PAD THAT—

- DISTRIBUTES LOADS
- COMPENSATES SURFACE IRREGULARITIES
- REDUCES SHOCK
- DAMPENS VIBRATION
- CUTS ERECTION AND MAINTENANCE COSTS

ON BRIDGES

UNDER MASONRY PLATES UNDER EXPANSION JOINTS

AND MANY OTHER APPLICATIONS

Vibridge is an economical, scientifically engineered bridge pad developed after years of careful research and exhaustive tests. Composed of a special formulation of durable, high strength materials which are laminated, molded and vulcanized under hydraulic pressure into an integral unit.

It is permanently resilient and greatly reduces transmitted vibration and shock. Completely impervious to oil, water, acid, alkali, and weather — seals out moisture and dirt, eliminates unsightly rust — prevents chipping and flaking of concrete or grout.

Vibridge is furnished ready for installation, cut to size with bolt holes as specified. Available in thicknesses from $\frac{1}{8}$ " to $\frac{5}{8}$ ".

Send for complete catalog information and technical data. Request Bulletin No. V-10.

MERRIMAN BROS., INC.

185 AMORY STREET · BOSTON 30, MASSACHUSETTS

For more facts, use Reader-Reply Card opposite page 18 and circle No. 392

CONTRACTORS AND ENGINEERS

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OCTOBE



**Steelmobile starts
50,000-mile 16-month tour
to exhibit Armco products**

Probably the most expensive sewer pipe ever built is that forming the shell for the \$50,000 custom-built trailer that last month started a 50,000-mile tour of the U. S. and Canada to exhibit Armco products in major cities in both countries. Dubbed the Steelmobile, the trailer body is a duplication of Armco pipe, but it is made of stainless steel rather than carbon steel.

Measuring 35 feet in length, 8 feet in width, and 12 feet in height, the Steelmobile has Armco guardrail wrapped around it to serve as a rubrail and rear bumper. Designed by Armco Drainage & Metal Products, Inc., a subsidiary of Armco Steel Corp., Middletown, Ohio, the trailer was built by a display-coach manufacturer.

The rolling exhibit will cover the southwest, the South and the East before going up into Canada and returning to the U. S. for a tour of the Midwest, the Rocky Mountain area, and the far West. During the tour, municipal, county, and state engineers, and those planning construction projects will be invited to view the Steelmobile's 16 individual displays, many of them showing products that will be in demand when construction starts on the expanded highway program.

One of the more dramatic displays has water recirculated through Armco Smooth-Flo sewer pipe to show the high-flow capacity of the product and the water-tightness of the connections.

Displays show Armco metal plank for bridge flooring, the company's bin-type retaining walls, steel sheeting that holds back earth in trenches and other excavations, foundation piling, liner plates for holding up earth in tunnels or lining existing tunnels, water control gates, guardrail for highways, traffic dividers, and prefabricated steel buildings.

The balance of displays show the line of Armco drainage pipe, including corrugated metal pipe, pipe arch, sewer pipe, corrugated metal sections for large drainage pipe, arch and pipe-arch, perforated pipe, and spiral welded pipe.

Six color films and 13 groups of slides on Armco products will also be shown in the Steelmobile. The coach also has a conference area for those who want more information on products, or who want to discuss their needs and problems with Armco representatives.

Heading Texas way right now is the Steelmobile, Armco's huge display coach that carries 17 exhibits. The Steelmobile will make stops in the south and northeast before touring Canada and the West.

Exhibits flank both sides of the Steelmobile. At the front end is a conference area where visitors can consult with Armco representatives.



**3 Simple
Reasons Why**



TRANSCRETES

**Put Bigger Profits
in Your Pocket!**

Take features like TRANSCRETE'S time-tested outswinging hopper and floating drive — add to them NEW SHORTER OVERALL LENGTH — and it's no wonder TRANSCRETE beats 'em all a country mile for pouring more and better concrete — easier, faster — and at less cost!

There's a size TRANSCRETE (4 models, from 3½ to 7 yard mixing capacities) to do any job in the books.

New Model 700 hauls up to 8 plus yard loads — mixes any 7-yard batch. Write CONSTRUCTION MACHINERY CO., Waterloo, Iowa.



3 QUICKER DISCHARGE

ALSO MANUFACTURER OF A COMPLETE LINE OF
**BUILDING MIXERS • CENTRAL PLANT
MIXERS • PLASTER & MORTAR MIXERS
PUMPS • HOISTS**

2 MORE THORO MIXING

For more facts, use Reader-Reply Card opposite page 18 and circle No. 393

FREE!

**tool CATALOG
for the trowel
TRADES**

No strings attached. If you are in the building trades, we want you to have a FREE copy of this "encyclopedia of tools." Fully illustrated, it's 70 pages long and describes more than 1000 tools, many so uncommon only one man in a hundred might need them. Every tool you'll ever need to earn a living is here. You don't have to buy anything to get our catalog. But when you do want tools, we have them. Get your copy now.

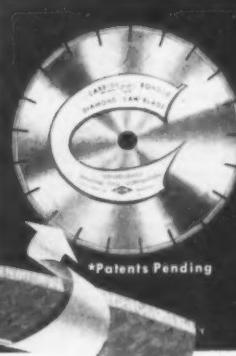


***** MAIL THIS COUPON TODAY! *****
Goldblatt Tool Company, Dept. S-10
1924 Walnut Street
Kansas City 8, Missouri
Please send me FREE your new Goldblatt Tool Catalog.
Name.....
Address.....
City..... State.....

For more facts, use coupon or circle No. 394

Be sure it's

**100%
Tungsten
Carbide
BONDED***



Look for the flat bottom segment

Due to the phenomenal success of Consolidated's 100% Tungsten Carbide Bond*... conventional blade manufacturers everywhere are adding minute quantities of Tungsten Carbide in their "old-fashioned" segments and claiming a Tungsten Carbide Bonded blade.

Your only assurance of lower costs through longer blade life is Consolidated's exclusive bonding of diamonds in a 100% Tungsten Carbide Bond. Specify the flat bottom segment and be sure!

Dealerships available — write today!



consolidated
DIAMOND TOOL CORP.
320 Yonkers Avenue, Yonkers, N.Y.

CONCRETE AND MASONRY CUTTING BLADE DIVISION

For more facts, circle No. 395

Rotary plow fits medium four-wheel-drive trucks

■ A new rotary snow plow for four-wheel-drive trucks in the 17,000-gvw range is announced by the Wm. Bros Boiler & Mfg. Co. The Model B Sno-Flyr is front-mounted by a universal hitch that permits interchange with push plows.

The Model B has a capacity for handling 20 tons of snow per minute and casting it up to 75 feet. A loading chute permits rapid loading of dump trucks. The casting chute rotates a full 360 degrees and has a capper to control the height of the snow stream.

The plow has a cutting width of 8 feet. It is powered by an 8-cylinder engine mounted on the truck chassis. The raising or lowering of the plow and the rotation of the casting chute are hydraulically controlled from the truck cab.

For further information write to the Road Machinery Division, Wm. Bros Boiler & Mfg. Co., 1057 Tenth Ave. S. E., Minneapolis, Minn., or use the Request Card at page 18. Circle No. 184.

Indiana dedicates stretch of new east-west Turnpike

A 140-mile stretch of the east-west Indiana Turnpike, from the Ohio line to East Gary, was dedicated about two weeks ago.

The remaining 16-mile stretch of the \$280,000,000 pike, from East Gary to Illinois, will open November 15, forming part of a network of toll roads which will connect Chicago and New York.

LIFT OBJECTS
QUICKLY —
SAFELY... ANY
SHAPE
OR SIZE!

with
DOWNS SAFETY GRABS
for Cranes and Hoists

Now you can tailor your lifting equipment to "fit" any shape or size materials to be moved with Downs Safety Grabs. No matter what your hoists are handling — pipe, rails, drums, plate or structural steel, stone, timber, boxes or odd-shaped objects of any size — there's a Downs Safety Grab designed for the job.

Downs Safety Grabs give you faster, easier lifting . . . and they're safety-engineered to provide a wider safety factor than listed capacity ratings. They can't let go until you release the load — real protection for workers that improves morale.

Write for FREE illustrated catalog 2008-B for complete information on every model — today!

DOWNS
DOWNS CRANE & HOIST CO.
MECHANICAL ENGINEERS
540 W. VERNON AVE. • LOS ANGELES 37, CALIF.

For more facts, circle No. 396



The casting chute on the Bros Model B Sno-Flyr rotary plow can cast the snow up to 75 feet.

Torque converter

■ The Twin Disc Clutch Series 13,800 three-stage torque converter is described in a bulletin from the company. Features of the unit pictured and described are the one standard output flange and shaft assembly, and three input arrangements. According to the specifications table, the maximum input horsepower, speed, and torque of the unit are 600, 1,800 rpm, and 1,750 foot-pounds, respectively.

To obtain Bulletin No. 507 write to the Twin Disc Clutch Co., Hydraulic Division, Rockford, Ill., or use the Request Card that is bound in at page 18. Circle No. 89.

An article on the coming Road Show appears on page 10.

Schrader large

Schrader Products
in use make
Large Bore Valve
service easy,
practical...
anywhere

Schrader
ESTABLISHED IN 1844

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Show

A NEW ENGLAND QUARRY OPERATOR has assigned most of his blast-hole operations to this Ingersoll-Rand Drillmaster. The rig was purchased to replace four churn drills which had been producing a toe condition in vertical holes. The Drillmaster lends itself to winter work because it requires no water for the drilling process, thus eliminating the freezing problem. Also, it permits drilling off the perpendicular which, in many cases, was found to be more advantageous. Using a 6-inch bit, this self-contained, air-powered rig cut holes from 75 to 180 feet deep on 15-foot centers in a serpentine and schist formation. The bits lasted through approximately 4,000 feet of drilling, cutting an average of about 60 feet per eight-hour shift. For more information on the Drillmaster circle No. 179 on the Request Card at page 18, or write to the Ingersoll-Rand Co., Phillipsburg, N. J.



Introduce 35-ton crane on rubber-tire carrier

■ A 35-ton Moto-Crane, Model MC530W, has been added to the Lorain line of power shovels and cranes manufactured by the Thew Shovel Co. The new rig is fully convertible to crane, clam, dragline, or hoe.

The rubber-tire carrier for the MC530W is longer (28½ feet), heavier, and stronger than previous models. It is 122 inches wide and is powered by either a gasoline or diesel engine through either a 10 or 15-speed transmission set. Its top highway speed is 37 mph.

The carrier can be supplied with 6×6, 6×4, or 8×4 axle arrangements. The 8×4 carrier permits

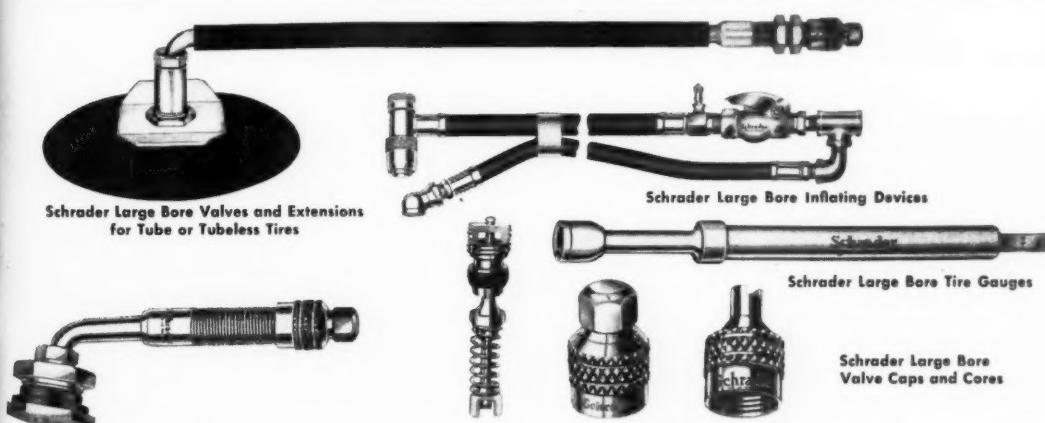
Forget tire valves for best performance off-the-road

Schrader has all the answers to your questions about large bore tire valve service. Up-to-the-minute information on tube or tubeless. Information that is reliable, and easy to get, because your questions are our business and we have the answers ready.

Wherever vehicles move heavy loads over rough terrain, Schrader Large Bore tire valves, gauges and service equipment are available for the large size tires.

Retaining the fundamental design of the famous Schrader long-core principle, the larger bore permits faster inflation and deflation and is constructed especially to withstand rugged service conditions.

Today, Schrader also provides new Tubeless large bore valves. Schrader has long meant top quality, top service for all tire gauges, valves and tools. Make Schrader your headquarters for service and information wherever you use air.



A. SCHRADER'S SON, Division of Scovill Manufacturing Company, Incorporated, 470 Vanderbilt Avenue, Brooklyn 38, N. Y.

IRST NAME IN TIRE VALVES

OR ORIGINAL EQUIPMENT AND REPLACEMENT

For more facts, use Reader-Reply Card opposite page 18 and circle No. 397

OCTOBER, 1956



Thew's new Lorain Moto-Crane, Model MC530W, is rated at 35 tons and is longer, heavier, and stronger than previous models.

greater lifting capacities without the use of outriggers and the double front axle gives better load distribution for improved flotation for off-highway travel. Hydraulic power-assist steering is standard and power brakes are optional.

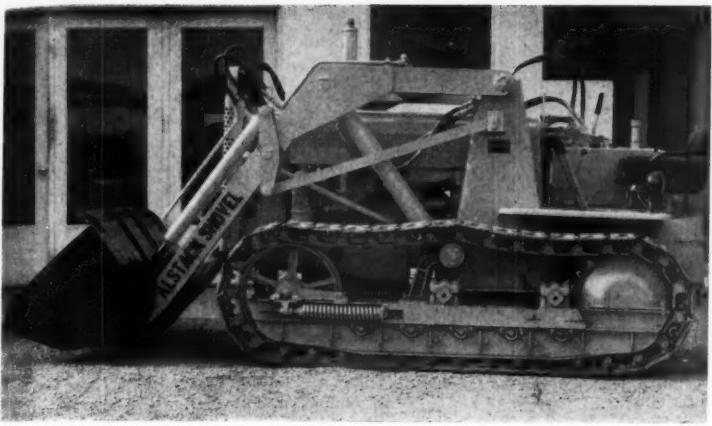
The Lorain Shear-Ball mounting is provided for mounting the turntable on the carrier. This mounting eliminates adjustment and maintenance of center pins, center pin nuts, and top or bottom rollers, the manufacturer reports.

The turntable uses either a gasoline engine with a hydraulic coupling power takeoff or a diesel engine with a torque converter. The hoist and swing drums are on anti-friction bearings and the rear counterweight is removable to lower the rig's weight for highway travel. The front and rear outrigger beams and boxes are also removable.

For further information write to the Thew Shovel Co., 28th and Fulton Road, Lorain, Ohio, or use the Request Card at page 18. Circle No. 175.

Cost of seaway increases

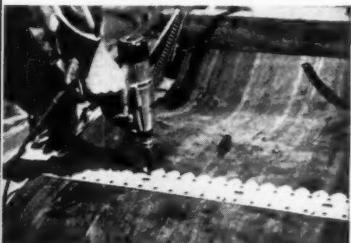
Contracts totaling more than \$156 million have been signed by Canadian authorities for that country's share of work on the St. Lawrence Seaway. The Canadian bill for the project has increased \$225 million over the original share of \$300 million.



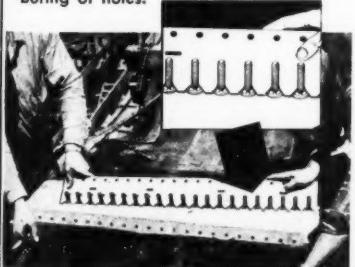
The Alstack 420-tractor shovel has a $\frac{1}{2}$ -cubic-yard capacity.

NEW FLEXCO POWER TOOLS CUT APPLICATION TIME IN HALF

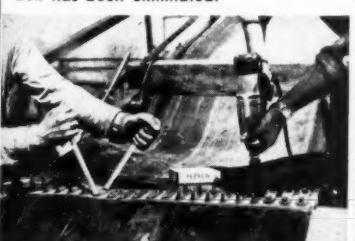
Your two man belt team can now join a belt 30" wide in 15 to 20 minutes . . . using the new FLEXCO Power Tools.



The FLEXCO Power Tool Boring Bit used with electric or air impact tool speeds boring of holes.



New FLEXCO Templet positions bolts for quick joining of belts. Reaching under belt has been eliminated.



Running down nuts is fast with the new FLEXCO Power Wrench used with electric or air impact tool. Two Bolt Breakers are used together to complete the joint.

If you are interested in speeding up fastener application, order the new Power Tools from your local FLEXCO Distributor. Write for Bulletin F-112-A.

FLEXIBLE STEEL LACING CO.

4608 Lexington Street • Chicago 44, Illinois

For more facts, circle No. 401

OCTOBER, 1956

Shovel doesn't interfere with tractor maintenance

A front-end loader that generally need not be removed when the tractor is serviced is available from G. A. Stackhouse. The Alstack 420 shovel has a capacity of $\frac{1}{2}$ cubic yard and a bucket width of 5 feet 1 inch.

According to the manufacturer, the tractor's engine and steering clutches can be removed without dismantling any part of the shovel. Brakes and other wearing parts are just as easily accessible.

The Alstack 420 has a dumping height of 8 feet 6 inches and a reach of 3 feet 2 inches. With a 45-degree bucket tip, the dumping clearance is 7 feet 4 inches. The main frame is of one-piece construction and both the lift and dump cylinders are double-acting.

For further information write to G. A. Stackhouse, Route 28, Rotary Circle, Hyannis, Mass., or use the Request Card at page 18. Circle No. 142.

Phone answering device aids job communication

An automatic telephone answering device, installed in the construction office of Morningside Gardens, a 1,000-apartment development being erected at 123rd St. and La Salle St. in New York City, has solved the problem of field communication between the general contractor and his superintendent. Joseph P. Blitz, Inc., New York, builder of the development, had the device installed at the site office. Anyone calling is informed that he is listening to a recording and is asked to state his message and leave his telephone number. The superintendent merely has to switch on the device to listen to a recording of all phone calls received during his absence.

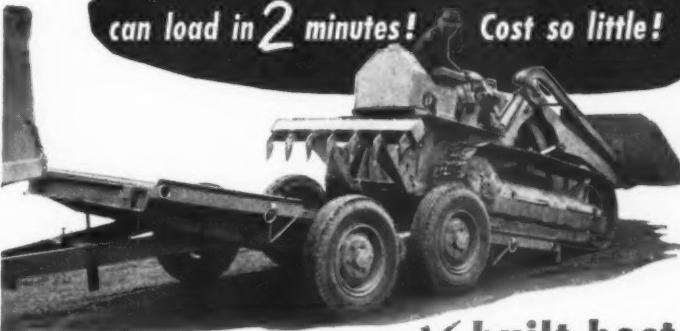
Thruway called "model"

In contrast to the majority of expressways—which will have to be improved to meet federal requirements for the Interstate Highway System—no additional money will have to be spent on the New York Thruway, which already conforms to federal standards. The road was cited as a "model" of construction by Charles D. Curtiss, commissioner of the Bureau of Public Roads, at a meeting of the American Automobile Association in Pittsburgh, Pa.

NO NEED for this— big trailer cost longer loading time



... when MILLER Tilt-Tops
can load in 2 minutes! Cost so little!



✓ built best ✓ priced best

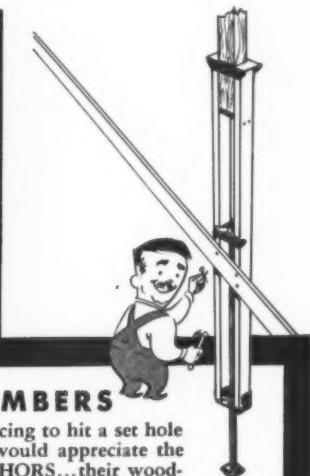
See your MILLER distributor
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MILLER
Tilt-Top Trailer Co.

456 S. 92nd St., Milwaukee 14, Wis.

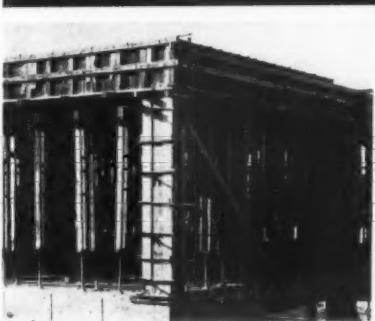
For more facts, use Reader-Reply Card opposite page 18 and circle No. 402

when shoring needs bracing ROOSHORS make it easier



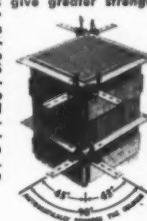
WOODEN UPPER MEMBERS

Ever try to drive a nail through bracing to hit a set hole in a metal pipe? Then you, too, would appreciate the ease in nailing bracing with ROOSHORS...their wooden upper members are the answer. The new ROOSHOR, extension type, actually gives you three shores in one...a flat-head shore, a male-head shore and an extension shore, by merely inserting any length 4 x 4 in the steel head. More ROOSHORS have been used than any other adjustable shore!



ROOS COLUMN CLAMPS

For speed and economy in column forming, Roos Column Clamps have six distinct advantages: two identical units • open either way • larger bars give greater strength • no loose parts • cannot fall off on end • only hammer needed to tighten. ROOSHORS AND ROOS COLUMN CLAMPS are available for rental with purchase option from warehouse stocks in principal cities. Write for Bulletin 556.



Baker-Roos, Inc.
P. O. Box #892, Indianapolis 6, Indiana
Gentlemen:
Please rush additional information, without obligation, on Rooshors and Roos Column Clamps.

Name _____
Company _____
Address _____
City _____ State _____

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 403

Engine pre-heater assures easy cold weather starts

■ A pre-heater that will raise engine temperature to 40 degrees F in a few minutes for easy starting in cold, wintry weather is available from Tech Products, Inc. The TPI pre-heater uses any standard electrical outlet for power.

The pre-heater is permanently installed on or near the engine. It works on a thermo-syphon principle. Engine coolant enters through an inlet near the base, expands as it is heated, and is forced out through an outlet near the top. A thermo-control automatically turns the current on or off to maintain a pre-set economical temperature, the manufacturer reports.

Models are available to accommodate engines with coolant capacities



of from 12 to 75 quarts and to operate with 120 or 240-volt current. For unusual situations, special models can be manufactured on request.

For further information write to Tech Products, Inc., 615 Pennsylvania Ave., Elizabeth, N. J., or use the Request Card at page 18. Circle No. 187.

Portable sprayers

■ Tarco sprayers spray direct from the shipping drum, according to a folder from the Tarrant Mfg. Co. Action shots show the sprayers used for cold patching, waterproofing, paint-

ing, subsealing, and for weed and insect control. Construction details point out that pneumatic tires, mounted on roller-bearing wheels, support the electric-welded channel iron frame.

To obtain Folder No. TS-356 write to the Tarrant Mfg. Co., 27-29 Juniper Place, Saratoga Springs, N. Y., or use the Request Card at page 18. Circle No. 91.

The Alaska Road Commission has been transferred from the Department of the Interior to the Department of Commerce.

Here are important facts for the "man behind the gun"



This White 18" Dumpy level has
... more of the
features you want,
yet costs you less!

Before you buy, compare this White Dumpy level with a similar model of any other recognized make. From every standpoint — design detail . . . quality construction . . . work-speeding, life-lengthening features and cost — you'll quickly see why a White's the best buy you can make. It will make your work faster, easier, more accurate. Check this comparison chart:

FEATURES	D. White No. 7080	Instrument A	Instrument B
Magnifying power of telescope	35X	30X	27X
Distance away you can read 1/100 ft. graduation	1200 ft.	1050 ft.	900 ft.
Diameter of objective lens	1.81 in.	1.485 in.	1.69 in.
Field of view (in minutes of arc)	64'	52'	60'
Coated optics	YES	YES	YES
Covered leveling screws	YES	YES	YES
Can you easily replace worn leveling screws in the field?	YES	NO	YES
Sensitivity of level vial (in seconds of arc per 2mm of graduation)	20"	20"	25"
Price — complete with carrying case, tripod and accessories — F.O.B. factory	\$315.00*	higher	higher

For complete details on the 18-in. Dumpy level and other equally fine engineering instruments, see your David White dealer, or write direct to DAVID WHITE CO., 313 W. Court Street, Milwaukee 12, Wisconsin.



We offer complete, expert repair service on all makes, all types of instruments.

*Price subject to change without notice.
For more facts, circle No. 404

WHO

JANUARY 28

FEBRUARY 2

the ARBA ROAD SHOW

and CONVENTION

Exhibits

Whatever your interests, you'll find the equipment, materials and supplies you use on display. New models, new methods and current machines are exhibited.

Discussions

Hear internationally known authorities report on latest advancements in construction—lead discussions about new ideas and details of the road program.

Demonstrations

See machines at work, actually doing the jobs which you face each day. See methods proved before your eyes.

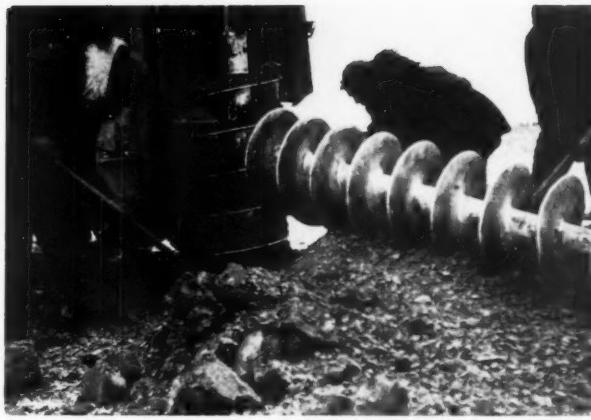
Get-togethers

The contacts you make will prove of inestimable value. Experts from every part of the world—every one ready to talk about your problems.

**Thor names manager
for Indianapolis branch**

A veteran sales and service engineer for Thor Power Tool Co., Richard E. James, Jr., will be manager of the company's new Indianapolis Branch. He served in industrial engineering capacities with several companies before coming to the Aurora, Ill., firm where, since 1950, he has concentrated on industrial accounts in the southern states.

Another appointment made by Thor is that of John P. Bank as sales engineer of the company.



WITH THE TEMPERATURE RANGING FROM ZERO to minus 30 degrees, this McCarthy auger drill operated efficiently in cutting 18-inch-diameter holes 32½ feet into permafrost on an Air Force project near the Kuskokwim River, Bethel, Alaska. The drill was used to complete 915 holes for timber piles and for test holes on other projects in the vicinity. Morrison-Knudsen Co., Inc., the contractor, equipped the drill with an Alaskaug bit with carbide inserts. This tool has four cutting surfaces with square carbide inserts that can be reversed to use the other sides. The holes were drilled through a 2½-foot sand mat, used to support equipment when the surface ground was not frozen; 1½ feet of mossy tundra; and 28½ feet of permafrost that consisted of sandy silt, highly abrasive when frozen, with from 15 to 20 per cent water content. The McCarthy drill was used on a continuous three-shift basis because the extreme temperatures caused restarting problems when there was a shutdown. For more details on the drill write to The Salem Tool Co., 769 S. Ellsworth Ave., Salem, Ohio, or use the Request Card at page 18. Circle No. 135.

HOU'LL SEE THERE!

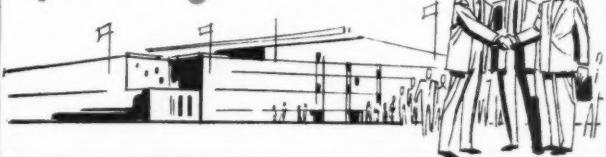
WORKS
PRODUCTS COMPANY, INC.
UP CORPORATION
INDUSTRIAL PRODUCTS, INC.
HALLERS MANUFACTURING CO.
IN BOSCH DIVISION
CAN BOSCH ARMA CORPORATION
IN CHAIN & CABLE COMPANY,
IN HOIST & DERRICK CO.
IN MANGANESE STEEL
IN OF AMERICAN BRAKE SHOE
IN TRACTOR CORPORATION
IN TRACTOR EQUIPMENT
IN DRILLING & METAL
EQUIPMENT, INC.
PRODUCTS CORPORATION
WESTERN COMPANY
CLIMA-HAMILTON
MANUFACTURING
GREENE COMPANY
MANUFACTURING CO.
SHOVELS, INC.
BOX CO.
IN BOILER & MFG. CO.
COMPANY
SILVER TRACTOR CO.
E. MANUFACTURING CO.
NET MOTOR CORP.
COMMERCIAL DEPARTMENT
DAWHIDE MANUFACTURING
CORPORATION —
CORPORATION
HEAD DREDGING
IDEAS
THE
COPARTNERSHIP
TRENCHER COMPANY
ACTION MACHINERY COMPANY
TOTAL MOTORS CORPORATION
EQUIPMENT COMPANY
CUMMER & SON COMPANY
ENGINE COMPANY, INC.
CORPORATION
COMPANY
HALMERS MANUFACTURING CO.
MOL-SPRINGFIELD ROLLER CO
ESTER COMPANY
CO.
CARTER COMPANY
CORPORATION
STEEL FOUNDRY COMPANY

ELECTRIC WHEEL COMPANY
ERIE-STRAYER COMPANY
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GENERAL MOTORS CORPORATION
FISKE BROTHERS REFINING CO.
FORD MOTOR CO.
FRUEHAUF TRAILER COMPANY
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THE GALION IRON WORKS & MFG. CO.
GAR WOOD INDUSTRIES, INCORPORATED
GENERAL ROAD MACHINES, INC.
GILSON BROTHERS COMPANY
GMC TRUCK & COACH DIVISION
GENERAL MOTORS CORPORATION
GOODROADS MACHINERY CORPORATION
DETROIT DIESEL ENGINE
DIVISION GENERAL MOTORS CORP.

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Weather charts

The weather outlook for November

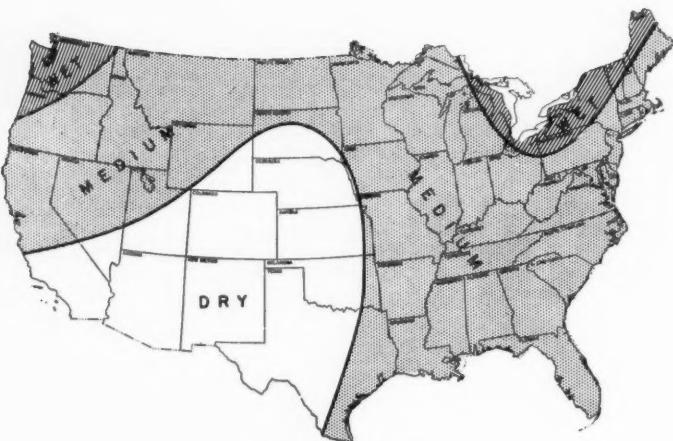


Chart I—Precipitation

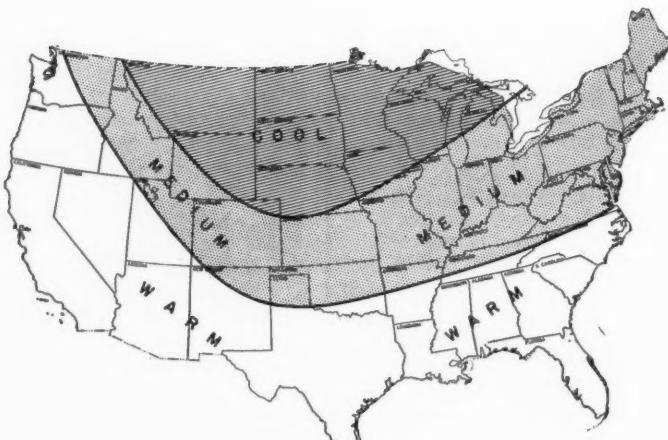


Chart II—Temperature

The average weather conditions to be expected throughout the United States for the month of November are indicated in the two accompanying weather maps. Chart I shows precipitation and Chart II illustrates the temperature ranges to be expected during the month.

Chart I indicates that on the average there will be less than six days of rainfall. In areas marked medium between six and 12 rainy days can be expected; and wet regions will have an excess of 12 days of rainfall.

Chart II shows that warm areas will have less than 10 days of temperatures 32 degrees or lower. Areas marked medium will have between 10 and 22 such days; and cool regions will average over 22 days with below freezing temperature.

The charts can be used in a relative sense. For example, eastern Michigan

will be wetter than the western part of the state, and Iowa, which will have more rainy days than Nebraska, will be drier than New York. At the same time, more freezing temperatures may be expected in most of Nebraska than in southeastern Iowa; and Wisconsin and northern Michigan can expect more days with freezing temperatures than would New England.

The charts, prepared by Weather Corp. of America, 39 Broadway, New York, N. Y., and 611 Olive St., St. Louis, Mo., for CONTRACTORS AND ENGINEERS, are indications of average conditions, and are not intended to be specific forecasts. Weather Corp. of America will answer questions pertaining to the charts, or to other applications of meteorology or climatology to the construction industry.

THE END

When you go to the Road Show, look for The ROAD SHOW DAILY published by Contractors and Engineers

Effect of road program on cities under study

A warning that the new highway building program may aggravate rather than reduce urban congestion is contained in "The Metropolitan Transportation Problem", a report published by the Brookings Institution.

The report suggests that cities coordinate road and community development in a program that includes construction of expressways, parking facilities, terminals, and mass transit facilities to overcome the problem.



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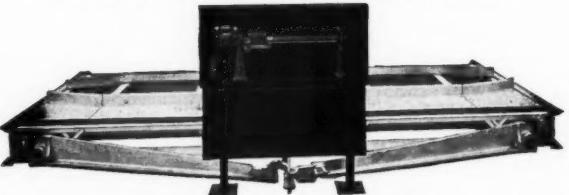
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Wide-tread truck tire good for longer wear

A new highway-truck tire with a wide, flat tread design said to promote slow, even wear is announced by The Kelly-Springfield Tire Co. The tread design is also reported to afford better traction because of the increased road-contact area.

The Kelly H. D. Armor Trac is available in sizes from 7.00×17 , 6-ply rating, through 10.00×22 , 12-ply rat-



ing. The casing has been subjected to a pre-stretching, heat-stabilizing treatment for extra strength and wear, the manufacturer reports.

A new carbon black has been blended into the rubber to give added mileage. The cord plies are welded into a single unit with flexing tension and strain evenly distributed over the sidewalls and shoulder area.

For further information write to The Kelly-Springfield Tire Co., Cumberland, Md., or use the Request Card at page 18. Circle No. 116.

Study conveyor system

Though New York City has postponed action on installing a Carveyor—a series of conveyor belts for carrying small passenger cars—for the Grand Central-Times Square shuttle, the Carveyor has caught the attention of other cities.

Invented by the Goodyear Tire & Rubber Co. and the Stephens-Adamson Mfg. Co., the Carveyor is being considered for Philadelphia, Pa.

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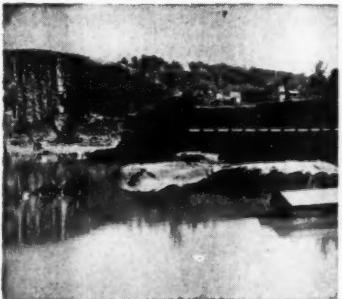
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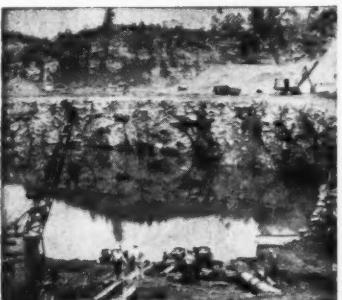
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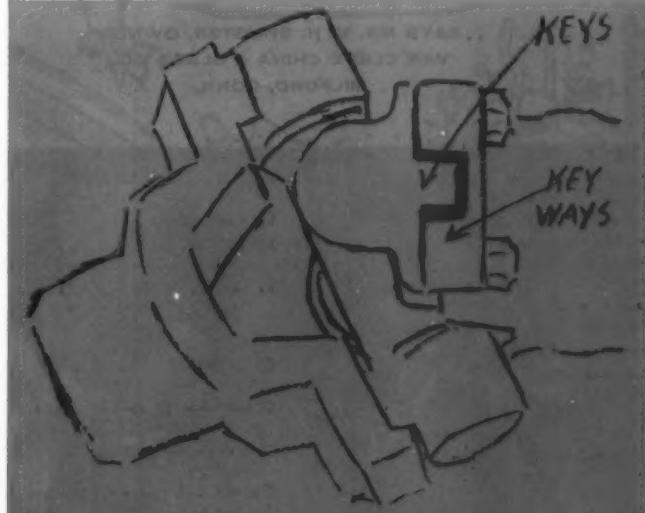
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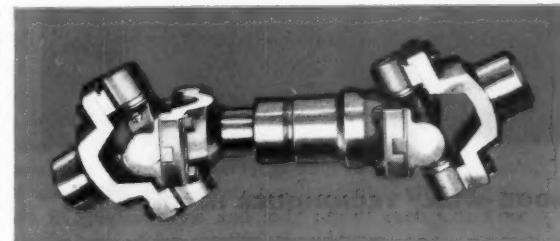
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Contractors doing business with the federal government often run into conflicting agency policies that produce confusion and result in many injustices. Realizing this, the newly formed Cabinet Committee on Small Business has come up with three recommendations to produce some uniformity in government procedures and to clarify points that give bidders trouble.

In its first progress report to President Eisenhower, the committee urged, first, that a "comprehensive review" be made of the contracting policies and procedures of all execu-

tive departments and agencies, with a view toward codifying and simplifying them.

Second, the committee recommends that the President direct the executive branches to adopt procedures insuring that the need for advance or progress payments to a bidder will not be considered a point against him in awarding contracts. When awards are made to such bidders, progress payments under the contract should be speeded; in turn, prime contractors are urged to promptly make similar payments to their subcontractors.

by HUBERT KELLEY, Jr.

Third, the committee recommends that the Renegotiation Board encourage subcontracting by giving successful bidders "favorable consideration" in determining their allowable profits. "It is desirable to dispel the supposition of many businessmen that allowable profits on a government contract will be prejudiced to the extent that they subcontract the work," the committee report observes.

President Eisenhower said he would give the recommendations "the prompt and favorable consideration they deserve—both in preparing for executive action and in drawing up

the administration's legislative program for the new Congress."

The Federal Power Commission, during fiscal 1956, approved new interstate natural gas pipeline facilities estimated to cost over \$461.4 million. The authorized work included some 4,400 miles of pipelines, and about 255,000 horsepower in compressor units.

The biggest single construction project given the green light was the application of El Paso Natural Gas Co. for pipeline and compressor station expansion in Texas, New Mexico, and Arizona. Costing an estimated \$184.6 million, the project aims primarily at increasing El Paso's gas transmission capacity to California.

"They were blasting right outside the window but we never lost a teacup!"

SAYS MR. V. H. SHUSTER, OWNER
VAN CLEVE CHINA & GLASS CO.
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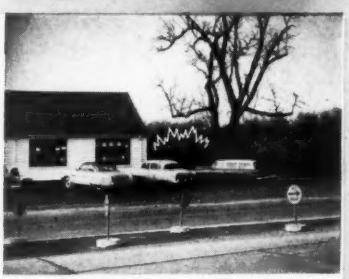


Photo shows nearness of Connecticut Turnpike blasting operations to the Van Cleve China & Glass shop.



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The government apparently will not hasten home construction by reducing down payments on federally insured mortgages until it feels inflationary pressures have subsided. This probably means postponement of action in this direction, if it comes, until sometime next year.

Housing Administrator Albert M. Cole, worried about the downturn in new starts, reportedly suggested that

CONTRACTORS AND ENGINEERS

down payments be cut from seven to five per cent on the first \$9,000 of appraised value of FHA-insured homes, and from 27 to 25 per cent on the mortgage balance.

He was rebuffed by top economic advisers at the White House, who felt that such an easier-credit step now would be inconsistent with the administration policy of trying to restrain inflation. The Federal Reserve Board was thinking about the same dangers when it raised its rediscount rate to member banks to three per cent, the highest in 23 years.

The FRB's move to tighten the money supply drew immediate fire from the home-building industry. Claiming that the government has displayed a lack of understanding and appreciation of the home mortgage market and the importance of housing to the economy, Joseph Havestick, president of the National Association of Home Builders, warned his members to keep construction plans well in check, until "remedial" action is taken. He stated that builders' costs are moving up rapidly, with many already turning from mass housing to higher-priced units in order to make a profit.

The government has not tended toward conservatism in the push for public housing. The Public Housing Administration put 44,422 units under contract before the July 31 deadline, only 578 short of the full 45,000 units authorized by Congress for the year ending on that date. The remaining 578 will be contracted for during the present fiscal year. This is on top of the 35,000 public housing units to be built under terms of the Housing Act of 1956. Another 35,000 are authorized in fiscal 1958.

In addition, it is expected that construction of over 20,000 housing units on Army installations will begin this fiscal year under the Capehart Act. Unit cost for this military housing has been raised from \$13,500 to \$16,500.

Rep. Louis Rabaut (D.-Mich.) disappointed with Washington's activity, claims that the new housing act falls short of meeting U. S. needs, and that private industry has made a "sincere effort" to provide necessary low-cost housing, but has been unable to keep pace with the growing demand. "Thirty-three per cent of our population is housed in quarters that are not fit for human habitation," he states.

Municipalities have been warned not to sit back and defer needed construction of sewage treatment facilities in anticipation of receiving grants-in-aid under the new Federal Water Pollution Control Act. Those communities which can pay for such projects by themselves will get no Washington funds.

The admonition came from President Eisenhower. "It should be clearly understood," he said, "that federal aid will not be available to all com-

munities, and with respect to any one project, the federal funds are limited in amount."

The anti-pollution act, which passed Congress, authorizes \$50 million annually in sewage construction aid to municipalities for the next 10 years. A federal grant is limited to 30 per cent of the "estimated reasonable cost" of the project or \$250,000, whichever is less. The town or city must pay the rest. Smaller communities, those with a maximum population of 125,000, will get at least half of the federal appropriations.

The significance of these provisions

seems to be that big cities, for the most part, will have to struggle along as best they can, getting their funds for waste disposal projects from such sources as state or local taxes or bonds.

But small communities will find their applications for construction aid carefully screened. They must meet five basic requirements. First, the proposed project must be approved by the state water pollution control agency; conform to the plan submitted by the state to federal authorities; and be included in a program prepared or developed by the U. S. Pub-

lic Health Service. The applying community must agree to pay the remaining construction costs and provide for insuring "proper and efficient" operation and maintenance of the project after construction. Lastly, the state water pollution control agency must certify that the contemplated project is entitled to priority over others on the basis of financial and pollution control needs.

The final arbiter is the Surgeon General. He will decide the weight of public interest involved in a project, and whether federal aid is proper and justified.

THE END



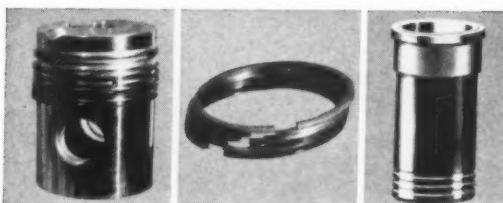
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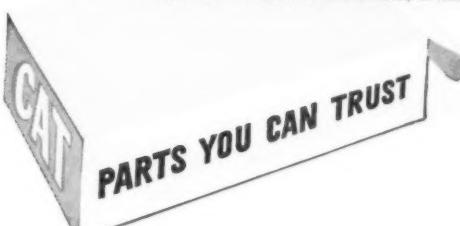
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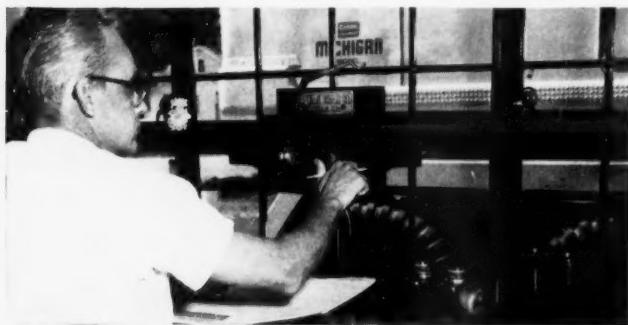
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1→ Every truck crane user has the problem of meeting highway weight limits, whether he drives over superhighways, or country roads.



2→ To prepare *this crane* (a new MICHIGAN Model T-24) for weighing, all that had to be done was remove counter-weight and rear outrigger under power, then un-pin boom.



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